FLNRO

Item	Tracking Number	Date	Source of Comment	Page
	e.g. MEM 1, MEM 2 etc.		*Agency or FN, Persons Name and Date.*	
1	FLNRO 1	3/27/2019	Kristen Murphy (FLNRO)	
2	FLNRO 2	3/27/2019	Kristen Murphy (FLNRO)	
3	FLNRO 3	3/27/2019	Kristen Murphy (FLNRO)	
4	FLNRO 4	3/27/2019	Kristen Murphy (FLNRO)	
5	FLNRO 5	3/27/2019	Kristen Murphy (FLNRO)	

Section

Reviewer Comment
Issue description, either verbatim as submitted or paraphrased / summarized. Summarizing comments and the salient issue(s) is recommended if particularly long, but not required.
Support the inclusion of a cavity nesting cohort. This is important to show changes to forest structure over time. Particularly relevant to the cumulative effects component.
Support KNCs recommendation of inclusion of a raptor cohort. KNC pointed out that there is readily available data and a diversity of raptors, both migratory and resident, have been identified utilizing this area.
Request that Columbia spotted frogs are included as a VC. Western toads are primarily a terrestrial species so do not make a good indicator for all amphibian spp. This may cover wetland habitat and non-fish bearing stream habitat.
There are no reported mountain goat sightings within the footprint of the project. As such, FLNRO confirms that they should not be included in the VC selection. However, there are confirmed mountain goats east of the project across the Alberta border. As such, it is requested that within the bighorn sheep VC, mountain goats are considered for potential migratory corridor impacts.
FLNRO supports Vast Resources proposal to include Columbia ground squirrel. This is a primary prey species for many of the identified VCs.

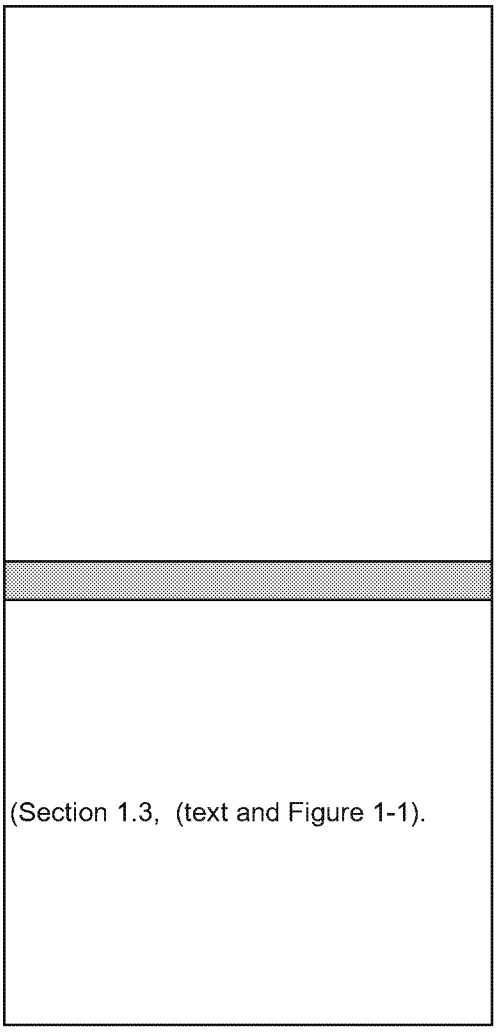
Valued Component	Proponent Response
e.g. Aquatic Resources, UWR etc.	
Woodpecker guild	A woodpecker guild will be included as a VC subcomponent.
Northern Goshawk and Cliff-nesting raptors	Raptors as a whole cohort are difficult to assess and has not been an included VC for surrounding projects. North Coal will focus the main assessment on Northern Goshawk so that comparisons can be made and cumulative effects can be assessed with nearby projects. Western Effects on cliff-nesting raptors will also be reviewed. Western screech-Owl will be assessed under the VC subcomponent Species of Conservation Concern. Migratory raptors will not be assessed since there is a very weak linkage of interaction with the Project.
Wildlife health	Wildlife health will be added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches, including Columbia spotted frog. Amphibian habitat is covered by wetlands.
Bighorn sheep	Mountain goat will be considered in the effects assessment of migratory corridor impacts for bighorn sheep.
Columbia ground squirrel	Columbia ground squirrel will be a VC subcomponent.

Document Section, Page Number
Table 5-1 and Table 6-1
Table 5-1 and Table 6-1
Table 5-1 and Table 6-1
Table 5-1
Table 5-1 and Table 6-1

Working Group Second Round Response

Proponent Response	Edits Done

	6	FLNRO 6	4/1/2019	Garrett McLaughlin (FLNRORD)	
ECCC					
	1	ECCC1	4/2/2019	Chelsey Cameron (ECCC)	pg. 9-10



(Section 1.3, (text and Figure 1-1).

In regards to climate change issues, I find the included "Environment / Physical Environment – Air VC" (Table 6-1) to be appropriate.
However, I do suggest that the Potential Effects should include emissions from deforestation activities (i.e. land-use change/land clearing from forest to non-forest), in addition to the listed emissions from blasting, ore transport, equipment, wash plant, and vehicle traffic.

Input from Greg Ashcroft: Global Climate was removed as a VC, and therefore GHG emissions are not assessed for effects, but you will be predicting and reporting out on GHG emissions in the Application (and will mention where in the draft AIR), and that will include any emissions that you predict from forest/vegetation removal for your project. Your response to Garrett's comment in the tracking table should mention how you will be treating the GHGs in your assessment, including those from de-forestation activities.

Recommendation: ECCC recommends editing Section 1.3 and Figure 1-1 to reflect the concept of protecting ecological receptors even in those situations where human health is not affected.
Rationale: The proponent describes the assessment approach as an "integrated approach that links the mine's ecological effects to human health via ecosystem pathways" (pg. 9). In this approach "Human Health is the ultimate receiver at the top of the triangle [see Figure 1-1]". Under CEAA (2012) effects to receptors are not only considered in terms of how they influence human health, but need to be protected for their ecological value independently of human health. For example, adverse effect to Fish and Fish Habitat should be considered regardless of whether effects to fish or fish habitat are subsequently resulting in an impact to human health.

Air	Land-use change will be included in the emissions calculations.
NA	The intrinsic value of nature is recognised. The intrinsic value is recognized as a cultural value contributing to human well-being. The text has been modified as follows: Note that this approach fully recognizes the intrinsic value of nature which also has cultural value contributing to human wellbeing.

Table 6-1 Potential Effects

Added to Section 1.3

No further comment

No response needed.	NA

2	ECCC2	4/2/2019	Chelsey Cameron (ECCC)	pg. 22 pg. 38
3	ECCC3		Chelsey Cameron (ECCC)	pg. 31

(Section 4.5, and Section 7.2.1.,)
(Section 6, Table 6,)

Recommendation: ECCC recommends that the proponent clarify the statement about the draft Coal Mining Effluent Regulations in Section 7.2.1. (pg. 38) and also section 4.5 should mention the draft Coal Mining Effluent Regulations.
Rationale: Applicable federal legislation is listed Section 4.5, but no reference is made to the proposed draft Coal Mining Effluent Regulations in this section. Later in the document (Section 7.2.1) the proponent refers to the proposed Coal Mining Effluent Regulations stating that "it is expected that North Coal will be required to meet standards under the new coal mining regulations that are proposed to be more stringent than the water being released in to the Michel and the Elk River; therefore, North Coal performance can be measured locally and not at a remote site". ECCC finds this statement to be unclear; while ECCC understands that the proponent is aware of the draft Coal Mining Effluent Regulations (based upon discussions between ECCC and the proponent on February 28, 2019 and March 12, 2019), the VC document could benefit from further editing to reflect the proponent's understanding of the proposed draft coal mining effluent regulations.
Environment and Climate Change Canada (ECCC) has been consulting with interested parties, including industry, the provinces and territories, and Indigenous groups, regarding the proposed approach for coal mining effluent regulations. Public consultation documents include:
o the National Consultation Report February to April 2017;
o the Proposed Approach for Coal Mining Effluent Regulations, November 2017, and
o the Signal Check: Proposed Coal Mining Effluent Regulations, Fall 2018
ECCC understands that these documents have been sent from CEAA (Fraser Ross) directly to the proponent. These documents, and further information on the regulatory approach and/or status of the regulatory development process, can also be obtained from:
James Arnott, Manager, Mining and Processing Division
Place Vincent Massey, 351 Blvd St-Joseph, 18th Floor Gatineau, Quebec, K1A 0H3
E-mail: ec.ermc-cmrd.ec@canada.ca

Recommendation: ECCC understands that this VC document is being used to inform the Provincial EA process, but recommends that in the federal Environmental Impact Statement (EIS) the proponent consider effects to Fish and Fish Habitat as per CEAA 2012 requirements; as such, the proponent would have to provide a rationale as to how the four fish sub-components and other proposed VCs (e.g. Aquatic Resources) adequately inform the overall effects assessment for Fish and Fish Habitat.
Rationale: The proponent proposed Fish and Fish Habitat as a Valued Component, with four specific fish species as sub-components (Westslope Cutthroat Trout, Bull Trout, Longnose Sucker and Mountain Whitefish). Federally, CEAA (2012) is concerned with assessing likely adverse environmental effects, including effects to Fish and Fish Habitat. Under CEAA 2012 effects must be assessed for all fish as defined in the Fisheries Act and is not limited to specific fish species. Fish as defined in the Fisheries Act does not only include fin fish but also other aquatic organisms (e.g., crustaceans). ECCC recognizes that benthic invertebrates are proposed as a separate VC (i.e., Aquatic Resources) by the proponent, and that this includes crustaceans.

Surface water	Text on the Coal Mining Effluent Regulations has been modified as follows: It is expected that North Coal will be required to meet standards under the new Coal Mining Effluent Regulations that are proposed to be more stringent (i.e., to meet the expected discharge limits for selenium of 5 µg/l mean monthly and 10 µg/l in a grab sample) than the water being released into Michel Creek and the Elk River.
Fish and fish habitat	Fish and fish habitat is a VC and will be assessed with respect to the federal Fisheries Act.

Section 4.5 and 7.2.1
NA

No further comment

No further comment

No response needed.	NA
No response needed.	NA

4	ECCC4	4/2/2019	Chelsey Cameron (ECCC)	
5	ECCC5	4/2/2019	Chelsey Cameron (ECCC)	
6	ECCC6	4/2/2019	Chelsey Cameron (ECCC)	

(Section 6, Figure 6-1 and 6-2)

(Section 6, Table 6-1 and Appendix A)

Figure 7-1

Recommendation: ECCC recommends that the proponent either provide further detail on the “links to aquatic pathways” shown in Figure 6-2 or provide more detail on the impacts of emissions on the aquatic receptors in Figure 6-1. Rationale: Figures 6-1 and 6-2 show the aquatic and terrestrial pathways, respectively. Emissions are shown as “linked to aquatic pathways” in Figure 6-2, but only amphibians are shown as affected receptors (Fig. 6-2). ECCC notes that effects from air emissions could also affect other aquatic receptors. Neither Figure 6-2 (Terrestrial Pathways) nor Figure 6-1 (Aquatic Pathways) clearly demonstrate if the water quality and/or aquatic receptors could be affected by coal dust deposition or other emissions from the project.
Recommendation: ECCC recommends that Appendix A is edited to match the three endpoints as listed in Table 6-1. Rationale: Table 6-1 lists the endpoints that will be used to assess effects. For Fish and Fish Habitat three endpoints are listed in Table 6-1. Endpoints are also listed in Appendix A as part of the comparison of VCs for similar projects. ECCC notes that for the Fish and Fish Habitat VC, the endpoints listed in Appendix A are different from the endpoints listed in Table 6-1.
Recommendation: ECCC recommends including an explanation of the Water Quality Control Point, either in the legend of Figure 7-1, or in the text of the VC document. Rationale: Figure 7-1 shows a Water Quality Control Point (Michel 13); however, the VC document does not explain or define the term “Water Quality Control Point”.

NA	The text in the table regarding potential effects has been modified as follows: Pathway to potential adverse effects on worker, public, fish and aquatic resources, and wildlife health.
NA	Appendix A has been revised.
Surface water	The text has been updated to define the Water Quality Control Point as follows: North Coal performance can be measured locally at Michel 13 (Water Quality Control Point) and the first EVWQP point downstream of the confluence with Alexander Creek. The following are the key monitoring points for water management: **Michel 13**: This is an attainment point for North Coal. It is not present in the EVWQP but it is a point downstream of the North Coal discharge points into Michel Creek. It is also located upstream of Alexander Creek it is representative of what is happing in Michel Creek prior to external influences (aside from the existing and closed CMO mine). This point will provide an indication of environmental performance in the stream and discharge regulations will not apply here. **Discharge Point**: These will be specific to each North Coal mine site and will enter Michel Creek upstream of Michel 13 and are where the new effluent regulations will apply (at end-of-pipe). **Michel 1**: Is downstream of Michel 13, Alexander Creek and the load inputs from EVO, but is just upstream of the Elk. River. It is a compliance point in the EVWQP for EVO, but North Coal does not have adequate data from Teck or access to the EVWQP model to compute the additional North Coal effect at this point. **Lake Koocanusa**: North Coal has received adequate data from Teck on flows and water quality to be able to provide selenium concentration levels and loadings at the Kookanusa inlet (EVWQP node = RG_DSELK_Inflow; E300230).

Table 6-1.
Michel Coal Project removed from table to remove duplication and inconsistencies.
Section 7.2.1.

No further comment
No further comment
No further comment

No response needed.	NA
No response needed.	NA
No response needed.	NA

7	ECCC7	4/2/2019	Chelsey Cameron (ECCC)	
8	ECCC8	4/2/2019	Chelsey Cameron (ECCC)	

Section 7.2.1 and Figure 7-1.
Section 7.2.1 and Figure 7-1.

Recommendation: ECCC recommends including Lake Koocanusa in the Regional Study Area and assessing the impact of the project to Lake Koocanusa. Rationale: The proponent states that “the regional study area is the area where cumulative effects and objectives are determined by the Elk Valley Water Quality Plan”, yet the proposed Regional Study Area for aquatic resources does not include Lake Koocanusa (which is included in the Elk Valley Water Quality Plan as Lake Management Unit 6). The proponent also states that “North Coal cannot compute contributions to Lake Koocanusa as it does not have access to the Teck EVWQP Model; therefore, Lake Koocanusa is not included in the RSA.” ECCC recognizes the challenges associated with the data/model restrictions, however, this should not be the reason for not including a potentially impacted area in the assessment. The incremental contribution of the Michel Coal Project to water quality in Lake Koocanusa should be assessed because it is the ultimate receiver of all Elk Valley watershed drainage, including all selenium loadings.
Recommendation: ECCC recommends that the proponent either demonstrate that all impacts to water quality are entirely limited to the Michel Creek Watershed, or that the proponent adjust the local study area to capture all potential project effects. Rationale: The local study area is defined as the Michel Creek Watershed (Section 7.2.1). The Local Study Area “typically comprises a larger area within which all (or most) potential project effects are expected to occur (BCEAO 2013)”. It is not clear if potential effects are entirely limited to the Michel Creek Watershed. In the Updated Project Description, the proponent states that the Project is anticipated to have a disturbance area of about 1,926ha, primarily within the Michel Creek Watershed. ECCC recommends that the proponent confirm if waterbodies outside of the Michel Creek Watershed (i.e., outside of the local study area) could be affected; for example, the possibility of groundwater discharging to Alexander Creek was discussed at the March 12, 2019 Valued Component meeting in Cranbrook, BC. Potential impacts of aerial deposition to water bodies beyond the Michel Creek Watershed should also be discussed.

Surface water	Acknowledged. Despite numerous approaches to Teck, NC does not have access to the Teck input data nor model for the EVWQP. There would be no point in recreating any of the models or duplicating the research that has already been done. Doing so would create confusion and make predictions and comparisons between projects very difficult. Furthermore, given that NC will be required to meet standards under the new coal mining Regs that are proposed to be more stringent than the water being released in to the Michel Creek and the Elk River, North Coal performance can be measured locally. North Coal has been provided data that will allow it to compute selenium loadings and concentrations at the inlet to Lake Koocanusa. North Coal can measure, predict and monitor at a local level in Michel Creek and at two known points in the EVWQP and meaningful determinations can be made at these points. Figure 7-2 includes Koocanusa in the RSA.
Surface water	Currently, the LSA incorporates the area that can be effectively modeled and managed as described above. The boundaries have been revised to accommodate potential groundwater discharges to Alexander Creek.

Figure 7-2 and Section 7.2.1

Figure 7-2

No further comment
No further comment

No response needed.	NA
No response needed.	NA

9	ECCC9	4/2/2019	Chelsey Cameron (ECCC)	(pg. 40)
10	ECCC10	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29

Section 7.3
Section 5,

Recommendation: Regardless of the naming conventions used for the different mine phases, ECCC recommends that the water quality impacts should be predicted far into the future, well beyond the active decommissioning and remediation phase.
Rationale: Section 7.3 states that potential effects from the project are expected to interact with the VCs during 4 phases: pre-development, project construction, operations and post-operational or closure. The proponent notes that the post-operational or closure phase includes both the decommissioning and the post-closure transition phase monitoring period. ECCC is unsure what the proponent considers as the post-closure transition phase monitoring period. Typically, closure and post-closure are considered two separate mine phases. The closure phase often includes active remediation and decommissioning, whereas the post-closure phase extends into the far future. Estimating impacts into the far future is relevant because some geochemical processes that affect water quality may occur long after mining activities are completed (e.g. acid rock drainage, metal leaching, selenium release).

Recommendation: ECCC recommends that for the purpose of assessing the potential adverse impacts of contaminants to aquatic-dependent wildlife, the Proponent select an amphibian species that has a sizable distribution within the Project area and that has a relatively high dependency on aquatic ecosystems. .
Rationale:
The Proponent considered Western Toad as a suitable surrogate for all amphibians due to their dependence on both wetland and upland habitats, and therefore has chosen it as the representative species to infer project impacts on amphibians. However, Western Toads have dissimilar ecological niches, habitat usage, and life history compared to other amphibian species potentially occurring in the area. For instance, Western Toads spend only a short amount of time in ponds to breed (approximately 1-4 weeks), and use terrestrial habitats during other times of the year for dispersal, migration, summer foraging, and overwintering. Therefore, their exposure risk to any Project-derived contaminants such as selenium is inherently lower compared to other amphibian species that spend significantly longer period of time in aquatic habitats. For instance, Columbia Spotted Frogs in adult, juvenile, and tadpole stages spend almost all their lives in permanent water bodies, and hence would experience heightened selenium exposure risk compared to Western Toads.
Columbia Spotted Frogs have been and continue to be used as the surrogate amphibian species for evaluating effects of selenium in other Elk Valley mines. A study conducted in the Elk Valley found a significant positive correlation between deformities in Columbia Spotted Frog tadpoles and selenium concentrations 1. The study recommends that additional investigation of selenium-related risk to Columbia Spotted Frog tadpoles is warranted, especially if concentrations exceed 20 mg/kg dry weight in multiple clutches per area. Furthermore, a recent report by Golder Associates Ltd. 2 emphasized that amphibians in the Elk Valley with aquatic diets (e.g. Columbia Spotted Frog) are more likely to reflect exposure to selenium in lentic areas than other amphibians with predominantly terrestrial diets (e.g. Western Toad).
As such, ECCC is of the view that Western Toad is not an appropriate VC sub-component for assessing impacts of contaminants to amphibians and other aquatic wildlife.
1 http://www.teck.com/media/2005-Water-selenium_status_report_2005-2006-T3.2.3.2.1.pdf.
2 Golder Associates Ltd. 2014. Elk Valley Water Quality Plan: Benchmark Derivation Report for Selenium. Report submitted to Teck Coal Ltd., Calgary, AB.

Surface water	The text has been revised as follows: Post-closure includes the assessment long-term effects.
Wildlife health	Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches, including Columbia spotted frog. Amphibian habitat is covered by wetlands.

Section 7.3.
Table 5-1 and Table 6-1

No further comment

ECCC is supportive of the Proponent including Wildlife Health as an additional VC, under which a representative species from all ecological niches will be used to assess potential risk of contaminants to wildlife. The Proponent indicated in their response that these representative species include Spotted Sandpiper, Columbia Spotted Frog, and Belted Kingfisher. ECCC recommends that this be made explicit in Table 6-1; presumably these species would be categorized as "Valued Subcomponents" under the Wildlife Health VC.

Under the column "Recommended Indicators / Endpoints" of Table 6-1, the Proponent indicated the following for the Wildlife Health VC: "Potentially significant acute or chronic effects on wildlife based on the ecological risk assessment". The effects assessment can be benefited by describing what "ecological risk assessment" entails (i.e. identifying more specific indicators/endpoints). As per previous comment, ECCC recommends that the following be added: "Changes in exposure risks to selenium and other contaminants, and their toxicity effects on wildlife health and productivity". Exposure risk analysis describes how organisms come in contact with contaminants across space and time. Toxicity is the inherent capacity of a contaminant to elicit adverse effects to their health and productivity through exposure.

The Proponent may consider moving American Dipper from the VC "Wildlife and Wildlife Habitat" to the VC "Wildlife Health", since dippers have been identified as "regionally important indicator species for selenium toxicity" (Table 5-1). Subsequently, the proponent should ensure that another riparian or riverine bird species or guild be selected under the VC "Wildlife and Wildlife Habitat".

No response needed.	NA
The representative species were selected for the wildlife health risk assessment based on the species that have available toxicological data, and have been linked to the extent possible with species assessed under wildlife and wildlife habitat; however, the species are **not** categorized as Valued Subcomponents. The results of the wildlife health risk assessment will then be used to help interpret the effects on species chosen for wildlife and wildlife habitat. The text "Changes in exposure risks to selenium and other contaminants, and their toxicity effects on wildlife health and productivity" has been added to the risk assessment indicator in Table 6-1.	

11	ECCC11	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29

Section 5,

Wildlife and Wildlife Habitat – Riverine Birds Recommendation: ECCC recommends that both Spotted Sandpipers and American Dippers be selected as Valued Components (VC) sub-components to represent avian riverine species.
Rationale:
Given the well-documented water quality issues associated with coal mining and the proportion of the Project area that is comprised of creeks, streams, as well as the Elk River, it is imperative to include multiple avian receptors representing riverine species. There is value in utilizing and assessing both sandpiper and dipper species as indicators of potential Project-related effects due to the differences in their habitat requirements, selenium sequestering capacity, and occurrence within the Elk Valley.
Despite both being riverine birds, the two species have distinct microhabitat requirements. Ongoing graduate research by ECCC has shown that Spotted Sandpipers in the Elk Valley largely forage for smaller invertebrates inhabiting the substrate along shorelines of river banks (e.g. dipterans) (Harding et al.1). In contrast, American Dippers capture larger aquatic insects (e.g. caddisfly, stonefly), as well as small fry and fish eggs, found in medium to fast-flowing streams. As such, selenium and other contaminants biomagnify via separate trophic pathways, which contributes to the difference in selenium exposure and sequestration, among other physiological, genetic, and ecological reasons.
The two species' difference in sequestering capacity is supported by Harding et al.1, where it was shown that mean egg selenium concentrations in Spotted Sandpipers were roughly two-fold higher than in American Dipper eggs, and that sandpipers nesting within the vicinity of coal mine operations exhibited reduced hatchability.
The basis of including American Dippers as a VC is due largely to the fact that dippers are altitudinal migrants or residents. As such, they are deemed to be useful indicators of potential Project effects given that they reside in the Project study area year-round and may be subject to Project-related effects that occur outside of the breeding season. Sandpipers, on the other hand, are found in the Elk Valley only during the breeding season. ECCC notes that in addition to the data provided by ECCC on selenium levels found in sandpiper eggs, the Proponent has also collected 5 eggs for selenium testing as part of their baseline studies. As such, it would be important to include Spotted Sandpiper as a VC subcomponent in addition to American Dipper.
Both dipper and sandpiper productivity (number of eggs laid, hatching success, nestling survival) and egg selenium burdens have been previously assessed in the Elk Valley (e.g., Harding et al., 2005). ECCC continues to build on such studies in recent ecotoxicology work in the Elk Valley. Given that these reference toxicity levels are available in the literature in the context of determining the effects of selenium, as well as the ongoing research on the two species, including both dippers and sandpipers as VC subcomponents would allow for a more comprehensive approach in assessing selenium effects.

1Harding LE, Graham M, Paton D (2005) Accumulation of selenium and lack of severe effects on productivity of American Dippers (cinclus mexicanus) and spotted sandpipers (Actitis macularia). Arch. Environ. Contam. Toxicol. 48:414-423.

American dipper and wildlife health	Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches, including Spotted Sandpiper. Water bird habitat is covered by wetlands.

Table 5-1 and Table 6-1

See ECCC second round response to ECCC10

No response needed.	NA

12	ECCC12	4/2/2019	Chelsey Cameron (ECCC)	pages 31-33

Section 6,

Wildlife and Wildlife Habitat – Migratory Bird

Recommendation: ECCC recommends that the Proponent break down the larger "Migratory Bird" category into smaller ecological guilds or groups of species occupying similar habitat types for assessing project effects, with each consisting of individual VC sub-components.

Rationale:

The Proponent selected "Migratory Birds" as a VC sub-component. Over 100 migratory bird species have been documented in the Elk Valley. The Proponent's effects assessment would benefit from partitioning this larger category into smaller guilds or habitat types occupied by distinct communities of bird species. ECCC's Bird Conservation Strategy for Bird Conservation Region (BCR) 10 depicts the various habitat classes found in the Northern Rockies region1. Within each habitat class, the strategy identifies a suite of species of conservation concern ("Priority Species"), important habitat features, population objectives, threats assessment, and recommended actions. This strategy can serve as a guide for selecting habitat-based VC sub-components for migratory birds. Based on the Proponent's preliminary baseline survey results and habitat types found within the Project area, these guilds can include but are not limited to:

- riparian birds;
- wetland birds;
- coniferous forest birds;
- deciduous and mixed wood forest birds; and
- Shrubs and early succession birds.

1 Environment Canada. 2013. Bird Conservation Strategy for Bird Conservation Region 10. Pacific and Yukon Region: Northern Rockies. https://www.canada.ca/en/environment-climate-change/services/migratory-bird-conservation/regions-strategies/description-region-10.html

Migratory birds	There are already most guilds represented by other species already listed as VC subcomponents; therefore, these additions would be redundant and potentially cause confusion. In assessing migratory birds, the analysis and discussion will consider the various migratory bird guilds.

NA

The Proponent indicated in their response that the addition of bird guilds would be "redundant and potentially cause confusion". ECCC does not agree with this conclusion. As per previous ECCC comment, over 100 migratory bird species have been documented in the Elk Valley, consisting of a diverse guild of birds (e.g., riparian, wetland, coniferous forest, deciduous forest, shrubs and early succession, aerial insectivores, waterfowl). Partitioning this VC-subcomponent into distinct guilds would not cause confusion, nor would it be redundant. As indicated in CWS's published technical report A Framework for the Science Assessment of Potential Project Impacts on Birds (2009) "...there needs to be a focus on assessing guilds of species (e.g., those sharing the same habitat)" (pg 10). ECCC requests that the Proponent explain how the aforementioned guilds are captured by one or more of the bird species already selected as a VC-subcomponent, using empirical evidence or support from existing scientific literature. Following this, any gaps identified should be addressed by including additional guilds under the VC "Wildlife and Wildlife Habitat". The Proponent is advised that a species does necessarily represent all other species within the same guild simply because they have overlapping habitat needs. For instance, though Common Nighthawks can be found nesting in open habitats, the species does not act as an ecological representative species for warblers in shrubs and early succession habitat (see Drever et al., 2008, for how woodpecker richness serves as a reliable indicator of overall bird richness in forest stands).

References:

Drever MC, Aitken K, Norris AR, Martin K. 2008. Woodpeckers as reliable indicators of bird richness, forest health and harvest. Biological Conservation 141:624-634.

Hanson A, Goudie I, Lang A, Gjerdrum C, Cotter R, Donaldson G (2009) A framework for the Science Assessment of potential Project Impacts on Birds. Canadian Wildlife Service Technical Report Series No.508 Atlantic Region. 61 pp.

North Coal acknowledges that the diversity of bird species is not fully represented by the chosen subcomponents; however, the VC selection process must consider precedents and a manageable scope of assessment following the guidance for selection of VCs. It is unknown as to why ECCC is requesting this scope given the federal EIS guidelines provided for the Project only request assessment of migratory birds and species of conservation concern, and the VC subcomponents for all nearby projects is a much more limited list. North Coal requests clarification on requirements from EAO.	NA

13	ECCC13	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29
14	ECCC14	4/2/2019	Chelsey Cameron (ECCC)	pages 31-33

Section 5,

Section 6

Wildlife and Wildlife Habitat – Migratory Bird
Recommendation: ECCC recommends that the Proponent consult with ECCC with respect to developing mitigation measures for migratory birds.
Rationale: The Proponent indicated in Table 5.1 that for Migratory Birds, "mitigation measures will be structured to manage all bird guilds". Mitigation measures for migratory birds should be planned and developed through engagement with ECCC and other working group members. The Proponent should conduct analyses to identify areas with high bird usage, and/or areas with high density of birds. Mitigation measures can then be focused on avoiding impacts to these hotspots (e.g., wetlands). This can be done using predictive modeling methods (e.g., distribution or occupancy models that incorporate habitat variables). Data sources besides the proponent's own baseline data can also be incorporated into the model. The Proponent may wish to use the document "Incidental Take and Protecting Habitat for Migratory Birds in the East Kootenay Region, British Columbia" as a guideline for developing such habitat models: https://www.for.gov.bc.ca/hfd/library/fia/2010/LBIP_9012005a.pdf.

Ecosystems - Wetlands
Recommendation: ECCC recommends the addition of the following to the "Potential Effects" column for the "Ecosystems" VC in Table 6-1:
• Changes in abundance and distribution of blue- and red-listed wetland ecological communities; and
• Changes in wetland function as it relates to migratory birds and species at risk.
Rationale: Wetlands are disproportionately important habitat for wildlife in Canada. Their conservation and careful use is central to achieving conservation objectives for migratory birds and species at risk. The federal government therefore has a long-standing objective of promoting the conservation of Canada's wetlands to sustain their ecological and other benefits. Provincially blue and red-listed wetlands are considered to have particular ecological importance in BC, and given their values, the objective of the federal government is to achieve no net loss of their functions in relation to federal activities (e.g., federal permits, licenses, authorizations and other instruments under federal jurisdiction).

Migratory birds	The proponent will continue to engage with Working Group members in development of migratory birds mitigations.
Wetlands	These two items have been added to potential effects as follows: Clearing of land for mine construction and operations could result in loss or degradation of important ecosystems. Change in abundance and distribution of blue- and red-listed wetland ecological communities. Changes in wetland function as it relates to migratory birds and species at risk. Changes in wetlands and wetland functions from selenium and other contaminants. Changes in the concentration of selenium and other contaminants in plant tissues, and their toxicity effects on plant health and growth. Pathway to potential changes of important vegetation and wildlife communities.

NA
Table 6-1

No further comment

ECCC is supportive of the added text in relation to wetlands under “Potential Effects” for the sub-component “Ecosystems”. ECCC recommends the following be added under the column “Recommended Indicators / Endpoints” (as underlined): “Changes in ecosystem availability, distribution, function/condition (i.e., changes to quality such as groundwater, surface water, soil species richness, rare spp, invasive spp, wildlife trees, wetland migratory birds/species at risk and their habitat and abundance).”

No response needed.	NA
The wetlands indicators / endpoints text has been revised to read as, "Changes in ecosystem availability, distribution, function/condition (i.e., changes to quality such as groundwater, surface water, soil species richness, rare spp, invasive spp, wildlife trees, migratory bird relative abundance)."	Y

15	ECCC15	4/2/2019	Chelsey Cameron (ECCC)	pages 31-33
16	ECCC16	4/2/2019	Chelsey Cameron (ECCC)	

Section 6,
Section 6, pages 31-33

Wildlife and Wildlife habitat - Fish-eating species for assessment

Recommendation: ECCC recommends a piscivorous avian species be added as a VC sub-component for the purpose of assessing potential effects of selenium and other contaminants to wildlife.

Rationale: Levels of selenium in waterways in the Elk Valley may have the potential to affect the health of piscivorous avian species through dietary exposure to contaminants of concern. Selenium concentrations 7 to 10 times higher than background levels have been found downstream of coal mines in the Elk Valley1. The effects of selenium toxicity to fish through chronic exposure is well documented in the literature, including pathological alterations to organs, reproductive failure, swelling of gills, and deformities of spine, head, mouth, and fins1. As such, ingestion of fish could be a significant source of selenium exposure. While the Proponent has already included American Dipper as a VC sub-component for assessing potential effects of selenium toxicity, this approach does not capture selenium biomagnification in aquatic wildlife through the consumption of fish. Dippers forage primarily on aquatic insects (e.g., caddisfly, stonefly). As such, the effects assessment could be benefited by including a piscivorous avian species at a higher trophic level as a VC sub-component (e.g., Great Blue Heron, Osprey, Bald Eagle, Belted Kingfisher). The appropriateness of the species may also depend on its density and distribution in the Elk Valley and project area.

1Hauer and Sexton (2013) Transboundary Flathead River: Water Quality and Aquatic Life Use. Final Report. Report prepared for: Glacier National Park, West Glacier, MT 59936.

Wildlife and Wildlife habitat – selenium exposure and toxicity

Recommendation: ECCC recommends that the following be added to Table 6-1 to describe “Potential Effects” for the “Wildlife and Wildlife Habitat” VC: Changes in exposure risks to selenium and other contaminants, and their toxicity effects on wildlife health and productivity.

Rationale:

ECCC notes that in Table 6-1, “Potential Effects” described for “Wildlife and Wildlife Habitat” include “effects on wildlife health from contaminant release”; however, this description does not capture the potential increase in exposure risk and toxicity effects of selenium and other contaminants arising from Project activities. Exposure risk analysis describes how organisms come in contact with contaminants across space and time. Toxicity is the inherent capacity of a contaminant to elicit adverse effects to their health and productivity through exposure. Capturing both of these parameters is crucial in determining potential Project effects on the selected VCs.

Wildlife health	Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches, including Belted Kingfisher as a piscivorous avian species.
Wildlife health	Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches.

Table 5-1 and Table 6-1
Table 5-1 and Table 6-1

See ECCC second round response to ECCC10
See ECCC second round response to ECCC10

No response needed.	NA
No response needed.	NA

17	ECCC17	4/2/2019	Chelsey Cameron (ECCC)	

Section 6, pages 31-33

Aquatic Resources and Ecosystems - selenium exposure and toxicity

Recommendation: ECCC recommends that the following be added in Table 6-1, under "Potential Effects":

- For "Aquatic Resources", add "Changes in benthic invertebrate species and populations as well as changes in the concentration of selenium and other contaminants in tissues."
- For "Ecosystems", add "Changes in wetlands and wetland functions from selenium and other contaminants", as well as "Changes in the concentration of selenium and other contaminants in plant tissues, and their toxicity effects on plant health and growth".

Rationale: Mining activities may result in changes to surface water and sediment quality, in particular with respect to selenium and its cumulative effects within the Elk River Valley. These changes have the potential to affect the "Ecosystems" and "Aquatic Resources" VCs; however, it appears that the Proponent did not address the potential toxicological effects of selenium and other Project-derived contaminants as part of the "Potential Effects" for these two VCs.

Aquatic health	Aquatic health has been added as a VC subcomponent and will include an aquatic life risk assessment that will assess health risks from potential contaminants for each aquatic niche. Note that the local monitoring program for selenium will be based on water quality, algae species composition and abundance, and benthic invertebrate indices. Any destructive sampling for monitoring selenium would need to tie into regional programs to avoid harming benthic invertebrate and fish populations by over sampling. The potential effects on aquatic resources description has been modified to add the following: Changes in benthic invertebrate species and populations as well as changes in the concentration of selenium and other contaminants in tissues. The following has been added to effects on ecosystems: Changes in wetlands and wetland functions from selenium and other contaminants. Changes in the concentration of selenium and other contaminants in plant tissues, and their toxicity effects on plant health and growth.

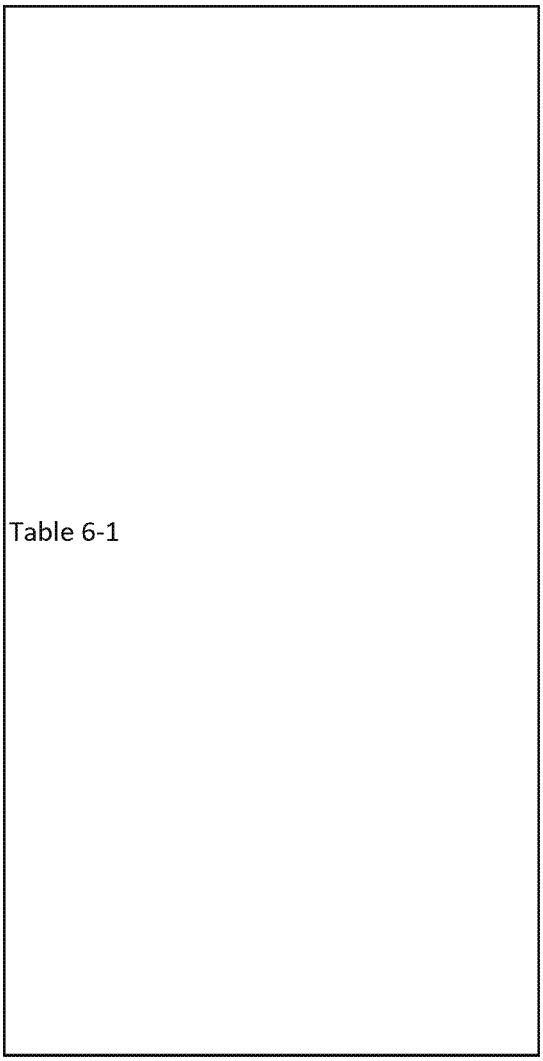


Table 6-1

No further comment

No response needed.	NA

18	ECCC18	4/2/2019	Chelsey Cameron (ECCC)	pages 31-33
19	ECCC19	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29

Section 6,

Section 5,

Wildlife and Wildlife Habitat – Aerial Insectivores
Recommendation: ECCC recommends that the Proponent conduct an effects assessment on aerial insectivores as a collective guild, in order to better determine potential project effects and inform design of mitigation measures.
Rationale: ECCC notes that a number of aerial insectivorous birds can be found in the project area, including five swallow, three swift, eight flycatcher, and one nightjar species. These also include three federally-listed SAR identified in the Proponent's draft VC selection document (Barn Swallow, Common Nighthawk, and Black Swift). Aerial insectivores represent a group of migratory bird species that feed almost exclusively on insects while on the wing, typically over open and aquatic habitats. Aerial insectivore populations have shown precipitous declines since the 1970's across the continent1. Given their shared foraging behaviour and habitat use, combined with their conservation status, the Proponent should consider selecting "aerial insectivore" as a VC sub-component as part of their effects assessment.
1Nebel S, Mills A, McCracken JD, Taylor PD (2010) Declines of Aerial Insectivores in North America follow a geographic gradient. Avian Conservation and Ecology 5(2).

Wildlife and Wildlife Habitat – Waterfowl
Recommendation: ECCC recommends that waterfowl be assessed as its own VC sub-component, or be included as a "riparian birds" or "wetland birds" VC sub-component (see comment above regarding breaking "Migratory Bird" down into smaller VC sub-components).
Rationale: ECCC notes that the Proponent excluded "waterfowl" as a VC sub-component on the basis of it being represented by American Dipper, Harlequin duck, riparian ecosystems and wildlife and wildlife habitat. American Dipper is not a waterfowl species, and have different life history and ecological requirements compared to most waterfowl species. Harlequin Duck was found in low densities in the project area (10-14 individuals) in 2018 according to the proponent's preliminary baseline results. "Riparian Ecosystem" and "Wildlife and Wildlife Habitat" are too broad to meaningfully capture project effects to waterfowl.

Wiildlife health, species of conservation concern, and migratory birds	Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches. Results of the risk assessment will be integrated into the effects assessments for species of conservation concern and migratory birds.
Migratory birds, wildlife health, wetlands, riparian ecosystems	The list of VCs was originally derived from nearby effects assessment to allow for comparisons to regional information and for cumulative effects assessment. There are already most guilds represented by other species already listed as VC subcomponents; therefore, these additions would be redundant and potentially cause confusion. In assessing migratory birds, the analysis and discussion will consider the various migratory bird guilds. Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches.

Table 5-1 and Table 6-1
NA

The Proponent has committed to assess the following species under the VC subcomponent "wildlife species of conservation concern": Northern Myotis, Bank Swallow, Barn Swallow, Black Swift, Lewis's Woodpecker, Williamson's Sapsucker, and Western Screech-Owl. ECCC recommends that this be made explicit in Table 6-1. For instance, the current statement under the column "Recommended Indicators/ Endpoints" can be changed (as underlined) as follows: "Changes in habitat availability, distribution, and abundance for species of conservation concern, including those that are federally listed under SARA or assessed by COSEWIC, such as Northern Myotis, Bank Swallow, Barn Swallow, Black Swift, Lewis's Woodpecker, Williamson's Sapsucker, and Western Screech-Owl *(or a separate table that lists these species*)."

In addition, ECCC notes that there is currently no reference to critical habitat in Table 6-1. As such, for the VC subcomponents "Limber pine, Whitebark pine, other species of conservation concern", "American Badger" and "wildlife species of special concern", ECCC requests that the Proponent add the following indicator/endpoint: "Changes to critical habitat, including its extent, availability, and presence of biophysical attributes". **In addition to the above comment, see also ECCC second round response to ECCC12**

See ECCC second round response to ECCC12

In Table 6-1, the text has been revised for the wildlife subcomponent to say, "Wildlife species of conservation concern (currently includes Northern Myotis, Bank Swallow, Barn Swallow, Black Swift, Lewis's Woodpecker, Williamson's Sapsucker, and Western Screech-Owl)" The indicators / endpoints text for rare plants and wildlife species of conservation concern has been revised to add the text, "Changes to any critical habitat, including its extent, availability, and presence of biophysical attributes."	
No response needed.	NA

20	ECCC20	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29
21	ECCC21	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29

Section 5,

Section 5,

Wildlife and Wildlife Habitat – Northern Goshawk

Recommendation: ECCC requests that the Proponent provide a rationale for the selection of Northern Goshawk as a VC sub-component. ECCC recommends that raptors be collectively assessed as a VC sub-component.

Rationale: ECCC notes that only one observation of Northern Goshawk was incidentally observed in the proponent's 3 years of raptor survey. As such, it is unclear as to why the Northern Goshawk was selected as a VC sub-component to represent all raptor species, including Western Screech-Owl that is SARA-listed as Threatened.

Wildlife and Wildlife habitat – Cavity nester

Recommendation: ECCC recommends that the proponent select a bird guild that is representative of forest birds as a VC subcomponent, including but not limited to woodpeckers.

Rationale: ECCC notes that the Proponent chose Red-breasted Nuthatch as a VC sub-component on the basis of it being a measurable indicator of changes in forest cover, as well as its relative abundance compared to regional breeding bird surveys for tracking suitable forest cover over time. It's not clear to ECCC how the nuthatch species can be used as a reliable surrogate for other forest birds based on shared ecological niches, habitat usage, and life history, as ECCC notes that Red-breasted Nuthatch was only detected in the 2015 breeding bird survey, but not in 2017. Selection of surrogate species should be well-supported and justified using empirical scientific evidence and/or available literature. For instance, cavity nesters such as woodpeckers can be used as ecological indicators of forest landbird species diversity1.

1Drever, M.C., Aitken, K.E.H., Norris A.

Northern Goshawk and Cliff-nesting raptors	Northern goshawk is the species assessed in nearby assessments and has been supported as a VC subcomponent by KNC. Additional surveys specific for northern goshawk are planned for 2019. Cliff-nesting raptors have been added as a VC subcomponent. Western Screech-Owl will be assessed under the species of conservation concern VC subcomponent. The rationale description has been modified as follows: Northern Goshawk - Raptor representative. Assessed in nearby projects. Cliff-nesting raptors - Ecologically important for ecosystems. Potential nesting habitat interacts with Project activities. Environment and Climate Change Canada requested more attention to potential effects on raptors.
Woodpecker guild	The nuthatch has been replaced by the woodpecker guild.

Table 5-1

Table 5-1 and Table 6-1

No further comment

No further comment

No response needed.	NA
No response needed.	NA

22	ECCC22	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29
23	ECCC23	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29

Section 5,
Section 5,

Wildlife and Wildlife Habitat – Western Screech-Owl
Recommendation: ECCC requests that the Proponent change the SARA-listing status of Western Screech-Owl to Threatened. Further, ECCC recommends that the Proponent include Western Screech-Owl as part of their effects assessment.
Rationale: ECCC notes that the Proponent indicated Western Screech-Owl was "Endangered" under SARA in Table 5-1, however, the species is listed as Threatened under SARA. ECCC also notes that the Proponent plans to undertake Western Screech-Owl surveys as part of their 2019 field program. As such, it is unclear to ECCC why the Proponent excluded this species as a VC sub-component. The species may be found in the riparian valley bottoms in mixed woodland habitat (e.g., areas dominated by Black Cottonwood, Water Birch, and Trembling Aspen), and as such, may be impacted by project activities.

Wildlife and Wildlife Habitat – Federally-listed Species at Risk
Recommendation: ECCC requests that the Proponent provide further justification and clarification as to why Lewis's Woodpecker and Williamson's Sapsucker were excluded as VC-subcomponents.
Rationale: ECCC notes that the Lewis's Woodpecker and Williamson's Sapsucker are federally-listed species at risk and were excluded as a VC sub-component on the basis that they are represented by birds and wildlife and wildlife habitat. The Proponent however has not explained whether suitable habitat may be available within the project area. The Proponent may wish to use Section 3.3 of the two species' recovery strategies as a reference for information on their habitat needs, such as the types of nesting and foraging trees.

Species of conservation concern	The species status has been updated to Threatened. Western Screech-Owl will be assessed under the species of conservation concern VC subcomponent.
Species of conservation concern and woodpecker guild	Lewis's Woodpecker and Williamson's Sapsucker will be assessed under the species of conservation concern and woodpecker guild VC subcomponents.

Table 5-1
Table 5-1 and Table 6-1

See ECCC second round response to ECCC18
See ECCC second round response to ECCC18

No response needed.	NA
No response needed.	NA

	24	ECCC24	4/2/2019	Chelsey Cameron (ECCC)	pages 25-29
Interior Health					
	1	IntHlth 1	4/4/2019	Gordon Moseley	
	2	IntHlth 2	4/4/2019	Gordon Moseley	

Section 5,

Wildlife and Wildlife Habitat – Little Brown Myotis
Recommendation: ECCC recommends that the Proponent consider assessing bats as a collective guild, which would include consideration of both SARA-listed species (Little Brown Myotis and Northern Myotis), as well as migratory bat species with potential to be affected by the proposed Project.
Rationale: ECCC notes that three migratory bat species (Silver-haired Bat, Hoary Bat, and Eastern Red Bat) with potential to be affected by the proposed project are identified as high priority candidates for assessment by COSEWIC and are currently planned for inclusion in a future call for bids. ECCC also notes that Northern Myotis, a SARA-listed Endangered species, was identified during baseline studies.

I would like to ensure that the proponent includes in their VC document, their legislative responsibilities under the BC Public Health Act [SBC 2003] C.23 and the Drinking Water Protection Act (SBC. 2001] C. 9. Specifically they must endeavour not to cause or contribute towards any public health hazard or adversely contaminate any drinking water supply in any fashion during all phases of this project, in addition to obtaining our approval for any on-site drinking water system. This is of particular significance when the proponent has expressed that the intention of that the primary objective of this valued component study and their integrated effects assessments is mitigating adverse impacts to human health as well as the natural environment.

I would also recommend making reference to all of the potentially negative human health impacts within the Health VC even if there are more comprehensive addressed within other listed VC's.

Little brown myotis	A bat guild has been considered, but is challenging because of the varied life requisites of each species and limited ability to collect data for each species. There is weak interaction of the Project with bat migration and limited unique features within the Project footprint that might be indicative of high importance. Therefore, little brown myotis is proposed as the bat representative which is also consistent with the VCs for nearby projects. Northern myotis will also be assessed under the species of conservation concern VC subcomponent. Note that including the VC subcomponent, species of conservation concern, has been included specifically to ensure compliance with SARA legislation that requires that each listed species be assessed for potential effects, and in recognition that the listed species change from year to year which would allow potential effects on Silver-haired Bat, Hoary Bat, and Eastern Red Bat to be assessed if they become listed.
Human health	Requirements of the BC Public Health Act and the Drinking Water Protection Act have been added to the source for the Community Health VC in Table 5-1 as follows: BC Public Health Act [SBC 2003] C.23 and the Drinking Water Protection Act (SBC. 2001] C. 9. Requirements that the project must not cause or contribute towards any public health hazard or adversely contaminate any drinking water supply in any fashion during all phases of this project, in addition to obtaining our approval for any on-site drinking water system.
Human health	The list of potential adverse effects on human health in Table 6-1 is comprehensive as follows: Increased risk of health effects from deterioration of air, water, sediment and soil quality, noise, and/or vibrations.

Table 5-1

Table 5-1 and Table 6.1

Table 6-1

ECCC supports the rationale for assessment of little brown myotis and northern myotis, but also notes the importance of the identification and assessment of potential effects to their roosting features, beyond those characterized as high importance. **See also ECCC second round response to ECCC18**.

This should also be reflected within both the Health and the Environment/Physical Environment VC's as applicable with Table 6 -1 in order to demonstrate application of the legislation listed in Sec. 4.5 of this document.

The list of all potential health effects from this project should be at least listed as valued subcomponents of the Human Health VC with reference to the discussion located within the correspding subcomponent of the Environment/Physical Environment VC.

The effects assessments of little brown myotis and northern myotis will consider roosting habitat.	NA
Table 5-1 text has been added to the surface water quality under the Physical Environment VC to include, "BC Public Health Act [SBC 2003] C.23 and the Drinking Water Protection Act (SBC. 2001] C. 9 include requirements that the project must not cause or contribute towards any public health hazard or adversely contaminate any drinking water supply in any fashion during all phases of this project, in addition to obtaining our approval for any on-site drinking water system." Table 6.1 : Text does not need to be changed because indicators for water quality and health already imply protection of public health and drinking water.	
The pathways showing links between the physical environment and health are shown in Figures 6-1 and 6-2. The physical environment factors are already presented as valued components and therefore do not need to be repeated as subcomponents under human health.	

District of Sparwood					
	1	D of S 1		Jeremy Johnson	
	2	D of S 2		Jeremy Johnson	
	3	D of S 3		Jeremy Johnson	Pg 10
	4	D of S 4		Jeremy Johnson	Pg 11
	5	D of S 5		Jeremy Johnson	Pg 11
	6	D of S 6		Jeremy Johnson	Pg 33
Health Canada					
	1	HC 1	4/4/2019	Kenneth Law	
	2	HC 2	4/4/2019	Kenneth Law	

Executive summary
Notes to readers

15-30 km This is a large range. Can they be more specific about how they are measuring this (i.e. is it measured to downtown Sparwood as the crow flies?) Sparwood's District boundaries are much closer to the project than 15 km. We can provide a map of District boundaries if proponent doesn't have easy access to one.
Notes to readers Ktunaxa Nation Coucil Council
cultural pathways that ultimately link to human health.
A mine life of up to 30 years, depending on final production rate; 35 years was mentioned at VC meeting
Could a comment be added about the nearest residential community
Community well being receptor - Could a comment be added about Shift schedules/proportion of our population working on shift schedules. Increased housing pressure
Health Canada notes that Tables 5-1, 6-1 and Appendix are inconsistent in their identification of health related candidate VCs, i.e. in Table 5-1, the VC is "Community Health" and "Drinking Water" and in Table 6-1 the VC is "Human Health" with corresponding subcomponents. Health Canada would like to suggest redefining these VCs to be more consistent in their respective tables.
Public safety - Interest of all levels of government for public safety. BC Mines Act and the Health, Safety and Reclamation Code for Mines in British Columbia. Legislation administered by BC Ministry of Energy, Mines and Petroleum Resources, policing, and local governments Included VC-Also of importance to North Coal to ensure public safety.

NA	The Project location in relation to the Sparwood District boundaries has been modified as follows: The Michel Coal Project (the Project) is a proposed open pit mine development in the Elk Valley in southeastern British Columbia (BC) located approximately 8 to 20 km southeast of the District of Sparwood boundary.
NA	Error has been corrected.
NA	Error has been corrected.
NA	Up to 30 years is the correct definition for the Project as defined. As with many mining projects, there is the potential for a longer mine life if more resources are identified during operations.
NA	The following text has been added to recognize the nearest residential community: The nearest communities are Crowsnest, Sparwood, Hosmer, Fernie, and Elkford, all within approximately 40 km of the Project;
Community wellbeing	Potential effects on community wellbeing has been expanded to include the following: Potential adverse social effects from shift schedules and the proportion of the population working on shift schedules, and increased housing pressure.
NA	Appendix A has been revised.
NA	No revision needed.

Executive Summary and page 8
Notes to reader
Page 10
NA
Section 2.1
Table 6-1
Michel Coal Project removed from table to remove duplication and inconsistencies.
NA

No further comment
Original comment was not provided by Health Canada.

Table 6.1	
No response needed.	NA
No response needed.	NA

3	HC 3	4/4/2019	Kenneth Law	
4	HC 4	4/4/2019	Kenneth Law	
5	HC 5	4/4/2019	Kenneth Law	
6	HC 6	4/4/2019	Kenneth Law	
7	HC 7	4/4/2019	Kenneth Law	

Table 5.1
Table 5.1
Table 6.1
Table 6.1
Table 6.1

Country foods Health Canada *is responsible for* ensuring a country foods risk assessment is completed for large projects. *- is responsible for -* This is incorrect, as Health Canada provides guidance on how to assess the effects (chemical contamination) to country foods.
Drinking Water - Health Canada requests clarification around why drinking water is excluded. Project inputs into water may originate from more sources than discharged water. Health Canada requests a stronger rationale for the exclusion of drinking water such as what specific legislation or requirements for groundwater and surface water are making this VC redundant. For more clarity and federal guidance on human health concerns in EA, Health Canada would like to encourage the Proponent to access our Environmental Assessment documents (in particular, on the subjects of Environmental Assessments on country foods, air quality, water quality and noise) at: https://www.canada.ca/en/services/health/publications/healthy-living.html#a2.5
Air - Health Canada suggests all criteria air contaminants are assessed for the Site including ground level ozone and ammonia.
Noise / Vibration - Intermediate - Noise and vibration emitted from mining, processing, and transport activities. Pathway to potential adverse effects on worker, public *and Indigenous receptors* , fish, and wildlife health and public wellbeing.Changes in *daytime and nighttime noise, tonal and impulsive noise, low frequency noise* and vibration levels relative to potential human and wildlife receptors *for all Project phases* . Compliance with threshold noise level for sleep disturbance and long-term annoyance from noise to *impacted receptors, including Indigenous Peoples.*
Groundwater (Quality and Quantity) - Intermediate - Seepage to groundwater of contaminants generated from coal mining. Pathway to potential adverse effects on the public *and Indigenous receptors* , fish, and wildlife health.Changes in quality and quantity.

Human health - Country foods	The text has been revised as follows: Health Canada provides guidance on how to assess the effects (chemical contamination) to country foods. Risk assessment is required for large projects.
Surface water and human health	The subcomponent community health under the VC human health will by necessity consider protection of drinking water quality. North Coal has also been referring to the federal EIS guidelines for VC selection. The rationale has been expanded as follows: The aquatic life guidelines that need to be met for surface water for the Project are more stringent than the drinking water guidelines. In addition, there are no groundwater drinking wells that will be affected by the Project.
Air	Air quality indicators text has been revised as follows: Changes in concentrations of PM10, PM2.5, NOx, SO2, CO, TSP, VOCs, PAH, metals, ground level ozone and ammonia relative to BC and Canadian ambient air quality objectives/criteria and/or baseline conditions.
Noise / vibration	The text on potential effects and indicators on noise and vibration was revised to that requested in the comment.
Groundwater	The text on potential effects from groundwater was revised to that requested in the comment.

Table 5-1
Table 5-1
Table 6-1
Table 6-1
Table 6-1

Health Canada suggests a revision to the text to as follows: "Health Canada provides guidance on how to assess the effects (chemical contamination) to country foods that includes completing a human health risk assessment (HHRA)."
Health Canada is satisfied that drinking water will be assessed as part of the proposed community health subcomponent, with the understanding that: If surface water contaminant concentrations exceed the aquatic life protection guidelines which are more stringent than the drinking water guidelines, these contaminants will subsequently need to be assessed under the drinking water guidelines. Health Canada notes that drinking water is not represented by the groundwater and surface water VCs which focus on discharge regulations which are not necessarily protective of human health.
No further comment
No further comment
No further comment

In Table 5-1 for country foods, the source text has been revised to say, "Health Canada provides guidance on how to assess the effects (chemical contamination) to country foods that includes completing a human health risk assessment (HHRA)."	Y
Discharge criteria are developed based on water quality modelling to protect receiving waters which includes protection of human health.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA

8	HC 8	4/4/2019	Kenneth Law	
9	HC 9	4/4/2019	Kenneth Law	
10	HC 10	4/4/2019	Kenneth Law	
11	HC 11	4/4/2019	Kenneth Law	
12	HC 12	4/4/2019	Kenneth Law	
13	HC 13	4/4/2019	Kenneth Law	

Table 6.1
Table 6.1
Table 6.1
Table 6.1
Table 6.1
Table 6.1

Surface Water Quality-IntermediateDischarge to surface water of contaminants generated from coal mining and equipment and vehicle operations. Pathway to potential adverse effects on human and wildlife drinking water. Pathway to potential effects on fish habitat and fish, wildlife, and human health *(including via recreational water use*).Changes in quality and quantity relative to BC and Canadian and/or site-specific standards consistent with the Elk Valley Water Quality Plan, any other regional plans to protect downstream water quality.
Sediment change potential effects last sentence to read aquatic plants, invertebrates, *fish, and human health.*
Soil-change potential effects last sentence to read communities *and, increased risk of invasive species, and potential adverse effects on human health.*
Health - Health Canada suggests that VC subcomponents for human health include air, water (ground and surface), soil, sediment, and noise in addition to those listed.
Health - Health Canada suggests including the indicators noted in other projects under Appendix A, pp. 62 across the VC row titled "Human Health", under the columns for Indicators & Endpoints as follows: “qualitative literature assessment for particulate matter, qualitative assessment from literature review of epidemiological studies associated with particulate matter related to dust and coal.” In addition, a qualitative discussion should be included for all non-threshold air contaminants at the Site.
Increased risk of health effects from deterioration *in quality and quantity of food* , air, water, sediment and soil quality,

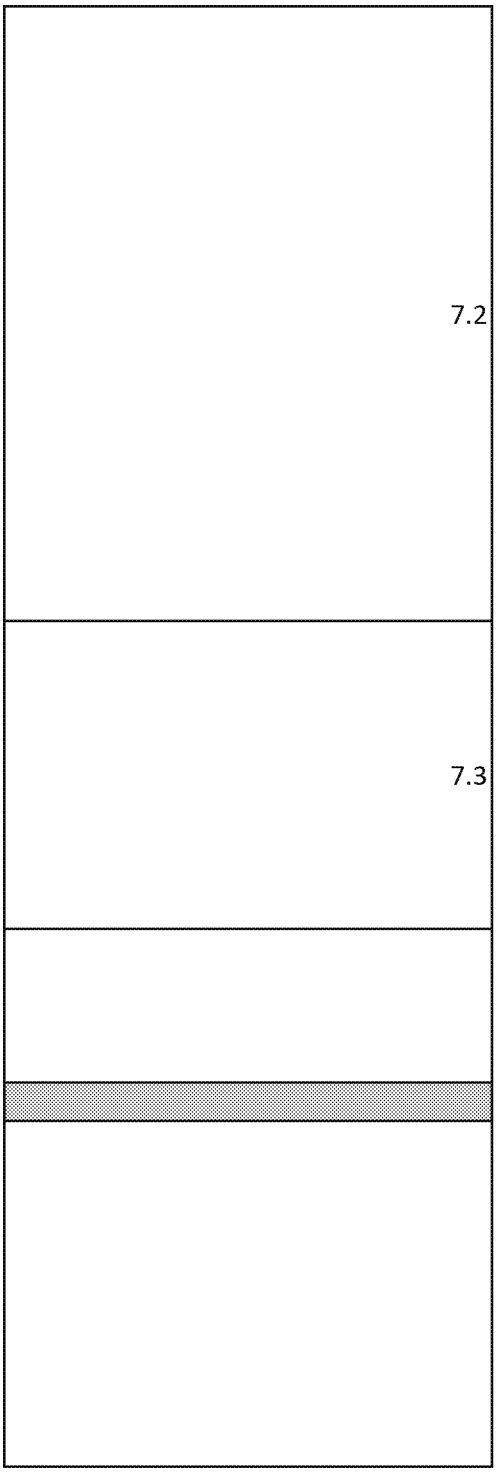
Surface water	The text on potential effects from surface water was revised to that requested in the comment.
Sediment	The text on potential effects from sediment was revised to that requested in the comment.
Soil	The text on potential effects from soil was revised to that requested in the comment.
Human health	The assessment of community health will include a human health risk assessment which will consider all of these pathways of potential contaminants.
Human health	Appendix A has been revised.
Human health	The text on potential effects on human health was revised to that requested in the comment.

Table 6-1
Table 6-1
Table 6-1
Table 6-1
Michel Coal Project removed from table to remove duplication and inconsistencies.
Table 6-1

No further comment
No further comment
No further comment
No further comment
Health Canada suggests that a qualitative discussion should be included for all non-threshold contaminants including, but not limited to, PM2.5, ground level ozone and NO2.
No further comment

No response needed.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA
Table 6-1 Air VC - under indicators, additional text has been included to read, "Qualitative changes for non-threshold contaminants in comparison to published literature. Please note a Memo response to comments HC 12 and MECC 01 on air quality is provided as a seperate document. This Memo cross references with comment HC12 above.This memo cross references comment MECC 01 below.	Y
No response needed.	NA

	14	HC 14	4/4/2019	Kenneth Law	
	15	HC 15	4/4/2019	Kenneth Law	
	16	HC 16	4/4/2019	Kenneth Law	
NRCAN			5/15/2019		Shelley Ball


7.2
7.3

Spatial Boundaries Health Canada suggests the spatial boundaries for Human Health be defined.
Temporal Boundaries *Health Canada suggests some time estimates for the project be provided, with the understanding that they are tentative.*
As per the above comments regarding consistency of VC categorizations, Health Canada suggests that drinking water, air quality and noise should be included in a discussion specific to human health.
Clarify what receptor VCs are linked to and what intermediate vcs are linked to.

Human health	The boundaries for human health are the same as the socioeconomic boundaries. The text has been modified as follows: The local socio-economic and health boundaries include the communities where the majority of the labour force will likely be housed and where the socio-economic and health effects will be most noticeable. Regional boundaries then expand to capture broader communities. The proposed socio-economic and health boundaries are shown in Figure 7 5.
NA	Temporal boundaries by necessity are linked to project progress and cannot be defined with an indeterminant timing for environmental assessments, permitting, and the decision to proceed with project development which is typically tied to financing and market conditions.
Human health	The assessment of community health will include a human health risk assessment which will consider all of these pathways of potential contaminants.
NA	Potential effects on receptor VCs are presented in Table 6-1 and linkages between intermediate and receptor VCs are shown in general in Figures 6-1 to 6-3.

Section 7.2.4
NA
NA
NA

Health Canada suggests that the Proponent clarifies that the local and regional study boundaries established in Figure 7 - 4, as it relates to air quality, noise and vibration, will also be inclusive for the biophysical impacts to human health as a spatial study boundary.

The local and regional study boundaries for socio-economic impacts as shown in Figure 7 - 5 do not cover the parts of the area across the BC-Alberta border which is covered by the boundary outlined in Figure 7 - 4. As biophysical impacts are not contained by a political border, Health Canada recommends that the human health study boundary includes the portions that are covered by the spatial boundaries for air quality and noise.

While Health Canada does not comment on the socio-economic impacts that is covered by the boundary in Figure 7 - 5, Health Canada notes that the area is possibly too large as a study area boundary for biophysical impacts to human health.

Health Canada would like to suggest the inclusion of some temporal estimates and approximate timelines for the different phases of the Project, such as construction, operations and decommissioning.

Health Canada notes that the British Columbia *Valued Components Guideline* includes establishing temporal boundaries including temporal limits of the Project (normally provided in the Project Description), and temporal characteristics of the VCs.

No further comment

I have reviewed the proponent's revised VC document and have no further comment. Although it is still not clear to me why the proponent has listed surficial geology as an intermediate VC, but then excluded it, it is such a minor point that it is not worth pursuing. As long as the information that NRCan needs to conduct its review is in the EIS, I'm fine with how the proponent has addressed the VC. I noted during the review that EAO reference their 2017 updated VC Guidance document, but that the document is not available. I have referred to the 2013 VC Guidance document for my review.

The text has been modified for spatial boundaries for health to say the following: "The boundaries for assessing health effects will also extend to the communities in Alberta within the boundaries shown in Figure 7-4 to account for cross-boundary biophysical impacts." It is acknowledged that biophysical impacts will not likely extend to the extent of the socio-economic RSA boundaries.	Y
The temporal boundaries are presented in Section 7.3 and the approximate timelines are presented in the Project Description, https://projects.eao.gov.bc.ca/api/document/5b86ded53f64cb00249e24e3/fetch/00Michel_PD_22Aug_2018_Rev03_FINAL.pdf .	NA
No response needed.	NA
No response needed.	NA

1	NRCAN 1	4/8/2019	NRCAN	
2	NRCAN 2	4/8/2019	NRCAN	
3	NRCAN 3	4/8/2019	NRCAN	
4	NRCAN 4	4/8/2019	NRCAN	
5	NRCAN 5	4/8/2019	NRCAN	
6	NRCAN 6	4/8/2019	NRCAN	
7	NRCAN 7	4/8/2019	NRCAN	
8	NRCAN 8	4/8/2019	NRCAN	
9	NRCAN 9	4/8/2019	NRCAN	

Table 5.1
Table 5.1
Table 5.1
Table 5.1
Table 5.1
Table 5.1
Table 5.1
Table 6.1
Table 6.1

Table 5.1 The use of VC terminology and the way the VCs are being assessed, as presented in this table, is very confusing and inconsistent. For example, under VC Status, in some cases a VC is listed as included and then, under rationale, is listed as an intermediate VC, which is fine. But then for other VCs (such as surficial geology), the VC is listed as excluded but then in the rationale column, is said to be an intermediate VC. How can it be an intermediate VC if it's excluded from being a VC? The use of the terminology is inconsistent and leading to considerable confusion.
Groundwater (Quality and Quantity) Which specific receptors? Typically, an intermediate VC is a link along a pathway to the receptor VC. Please state what receptor VC the intermediate VC is linking to along the pathway.
Surface Water Quality Which specific receptors? See comment above.
Sediment Is this an intermediate VC or a receptor VC. It's not clear based on the terminology used by the proponent and no description is provided in the last column. Please definite which kind of VC it is.
Terrain Stability Is this an intermediate VC? It is not at all clear based on the terminology the proponent is using. If sediment is an intermediate VC, shouldn't soil also be an intermediate VC, to be consistent? When something is listed as an intermediate VC, the receptor should be specified.
Soil Is this an intermediate VC? It is not at all clear based on the terminology the proponent is using. If sediment is an intermediate VC, shouldn't soil also be an intermediate VC, to be consistent? When something is listed as an intermediate VC, the receptor should be specified.
Surficial Geology If this is an intermediate VC shouldn't it be included and not excluded? The categorization of VC status seems inconsistent.
Groundwater (Quality and Quantity) If this is the intermediate VC, then what is the receptor VC it is linked to? Is it fish and fish habitat?
Surface Water Quantity Receptor VCs?

NA	VCs are not excluded just because they are an intermediate VC. The text will be checked and revised for clarity. The terminology is consistent with the BC VC guidance document, which can be referred to for further clarity.
Groundwater	Groundwater is a pathway to surface water and all components that live in or drink the surface water. Potential effects in Table 6-1 and shown in general in Figures 6-1 to 6-3.
Surface water	Potential effects on receptor VCs are presented in Table 6-1 and linkages between intermediate and receptor VCs are shown in general in Figures 6-1 to 6-3.
Sediment	As indicated in Table 5-1, sediment is an intermediate VC.
Terrain stability	As indicated in Table 5-1, terrain stability, sediment and soil are intermediate VCs.
Soil	As indicated in Table 5-1, terrain stability, sediment and soil are intermediate VCs.
Surficial geology	Surficial geology is excluded as a VC.
Groundwater	Groundwater is an intermediate VC and a pathway to surface water and all components that live in or drink the surface water. Potential effects in Table 6-1 and shown in general in Figures 6-1 to 6-3.
Surface water	Surface water is an intermediate VC in that is a pathway to other effects (i.e., aquatic resources, fish and fish habitat, wildlife and wildlife habitat, non-commercial land use / recreation, community health).

NA
Table 5-1
Table 5-1
Table 5-1
Table 5-1
Table 5-1
Table 5-1
Table 5-1
Table 5-1

	10	NRCAN 10	4/8/2019	NRCAN	
	11	NRCAN 11	4/8/2019	NRCAN	
	12	NRCAN 12	4/8/2019	NRCAN	
	13	NRCAN 13	4/8/2019	NRCAN	
MECC					
	1	MECC 01	3/27/2019	Tarek Ayache	
	2	MECC 02	3/27/2019	Tarek Ayache	
	3	MECC 03	3/27/2019	Tarek Ayache	
	4	MECC 04	3/27/2019	Alison Neufeld	

Table 6.1
Table 6.1
Table 6.1
Appendix A
Table 6.1
Figure 7-4
Appendix A

Sediment So the VC it is linked to is fish and fish habitat? Please clarify.
Terrain Stability Are the receptor VCs fish and fish habitat and wildlife and wildlife habitat?
Soil These are the receptor VC s this intermediate VC is linked to?
Hydrogeology in Baldy Ridge column. This is well defined; shows which primary VCs the intermediate VC is linked to in the assessment of impacts.
NOx: whereas NO and NO2 would be included for dispersion modelling, only NO2 needs to be included as an indicator given that there are no AQOs for NO. CO: compared to AQOs, CO concentrations generally tend to be low. Its inclusion as an indicator might warrant some reconsideration. VOCs, PAH and metals: as there are no BC AQOs for these indicators, their assessment would be in reference to other objectives or for other purposes (health, ecosystems, etc.)
the RSA seems to be too large. I believe that an LSA of 50 km by 50 km is more than sufficient for air quality assessment, and that the RSA needs revising to be one and the same as the LSA (RSA=LSA=50kmx50km)
Appendix A Air quality for NC This part needs to be updated on par with the present changes (NO2, VOCs).
Aquatic Resources How does this VC compare to the Aquatic Health VC? Typically we see tissue metals concentrations as a measurement indicator within an Aquatic Health VC. Where will this piece fit into the assessment of Aquatic Resources?

Sediment	Potential effects on receptor VCs are presented in Table 6-1 and linkages between intermediate and receptor VCs are shown in general in Figures 6-1 to 6-3.
Terrain stability	Potential effects on receptor VCs are presented in Table 6-1 and linkages between intermediate and receptor VCs are shown in general in Figures 6-1 to 6-3.
Soil	Potential effects on receptor VCs are presented in Table 6-1 and linkages between intermediate and receptor VCs are shown in general in Figures 6-1 to 6-3.
NA	Appendix A has been revised.
Air	The indicator text has been revised to the following: Changes in concentrations of PM10, PM2.5, NOx, SO2, CO, TSP, VOCs, PAH, and metals, ground level ozone and ammonia relative to BC and Canadian ambient air quality objectives/criteria and/or baseline conditions.
Air	The boundaries have been revised as requested for the LSA and RSA to be 50 km by 50 km.
Air	Appendix A has been revised.
Aquatic health	Aquatic health has been added as a VC subcomponent and will include an aquatic life risk assessment that will assess health risks from potential contaminants for each aquatic niche. North Coal will work within regional monitoring programs to minimize the effects of destructive sampling on the resident aquatic populations.

NA
NA
NA
Michel Coal Project removed from table to remove duplication and inconsistencies.
Table 6-1
Figure 7-4
Michel Coal Project removed from table to remove duplication and inconsistencies.
Table 5-1

- In all my experience with EAs for mining projects, CO concentrations – whether modelled or measured – have never emerged to levels that would cause any concern for human health. In other words, to the best of my knowledge, modelled or measured CO concentrations around similar mining projects have been well below the AQOs or standards. If otherwise, please provide sound justification to include CO as an indicator. - Will ground level ozone and ammonia concentrations be significant enough to warrant their inclusion as indicators? What are the sources of ammonia and how large are their emissions? Will ozone be modelled (photochemical) or measured only? Ozone is typically of concern around/near urban centres, please provide a full justification.
Comment Addressed.
Comment Addressed.
Comment addressed.

The text for indicators for Air in Table 6-1 has been changed to read as follows: "Changes in concentrations of PM10, PM2.5, NO2, SO2, TSP relative to BC and Canadian ambient air quality objectives/criteria standards. Qualitative changes for non-threshold contaminants in comparison to published literature. GHG emissions (CO2, CH4, N2O) with respect to BC and Canadian emission goals. Please note a Memo response to comments HC 12 and MECC 01 on air quality is provided as a seperate document. This Memo cross references with comment HC12 above.	Y
No response needed.	NA
No response needed.	NA
No response needed.	NA

5	MECC 05	3/27/2019	Alison Neufeld	
6	MECC 06	3/27/2019	Alison Neufeld	
7	MECC 07	3/27/2019	Alison Neufeld	
8	MECC 08	3/27/2019	Alison Neufeld	

Table 6.1
Table 6.1
Table 6.1

Wildlife health Where will effects of Se bioaccumulation in amphibians and aquatic dependent birds be assessed? I didn't see this piece captured under Aquatic Resources and this appears to indicate it won't be captured under a Wildlife Health assessment.
The information in this table should align with the table in Appendix A.
Aquatic resources Benthic Invertebrates. How will potential Se bioaccumulation in amphibians and aquatic dependent birds be incorporated in the Aquatic Resources VC? Aquatic dependent birds and amphibians aren't included in the Aquatic Resources section and are important in the Se effects assessment. Again, more information should be provided on how the measurement endpoints for Benthic Invertebrates and Fish/Fish Habitat will be used to inform an effects assessment of amphibians and aquatic dependent birds. These are included in Figure 6-1, but the linkages in Table 6-1 are unclear. I agree that Benthic Invertebrates are an appropriate Valued Subcomponent and resulting effects pathways can be well articulated using Benthic Invertebrates. The aquatic health component (i.e., tissue metals concentrations) is critical for the assessment of effects. It was mentioned at the March 12, 2019 meeting that this information is being collected in baseline programs; however, I don't see it adequately reflected in the VC table. I recommend explicitly indicating that aquatic health, as measured by tissue metals concentrations in benthic invertebrates (and fish) will inform the assessment of effects within the aquatic resources VC. As presented, the Aquatic Resources VC appears to be assessed based only on changes to community endpoints and the aquatic health piece (tissue metals concentrations) isn't well represented. This is a critical indicator of aquatic related effects. ENV is expecting an assessment of potential effects to tissue metals and Se bioaccumulation for benthic invertebrates, fish, amphibians and birds. This assessment should inform the significance determination of the Aquatic Resources VC.
Fish and fish habitat - metal concentrations in fish end point. I'm glad to see this endpoint captured here and appreciate how detailed this section is. The tissue metals piece should also be reflected above with regards to benthic invertebrates.

Wildlife health	Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches.
NA	Appendix A has been revised.
Aquatic health	Aquatic health has been added as a VC subcomponent and will include an aquatic life risk assessment that will assess health risks from potential contaminants for each aquatic niche. North Coal will work within regional monitoring programs to minimize the effects of destructive sampling on the resident aquatic populations. Water quality and benthic population indices are preferred local indicators to minimize destructive sampling. North Coal will work within regional monitoring programs to minimize the effects of destructive sampling on the resident aquatic populations.
Fish and fish habitat	North Coal will work within regional monitoring programs to minimize the effects of destructive sampling on the resident aquatic populations.

Table 5-1
Michel Coal Project removed from table to remove duplication and inconsistencies.
Table 5-1
Table 6-1

Commend addressed.
Comment addressed.
Comment addressed.
Comment addressed.

No response needed.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA

9	MECC 09	3/27/2019	Alison Neufeld	
10	MECC 10	3/27/2019	Alison Neufeld	
11	MECC 11	3/27/2019	Alison Neufeld	
12	MECC 12	3/27/2019	Alison Neufeld	
13	MECC 13	3/27/2019	Alison Neufeld	
14	MECC 14	3/27/2019	Alison Neufeld	

Table 6.1
Table 6.1
Fig 6.1
Appendix A
Appendix A
Appendix A

Ecosystems - Wetland Availability of wetland habitat is important in the Se effects assessment, as lotic environments typically display increased rates of Se bioaccumulation. A thorough assessment of available wetland habitat and associated amphibian and bird occurrence and distribution will be valuable information to inform the assessment of potential effects to amphibians and other aquatic dependent wildlife within the Aquatic Resources VC.
Columbia spotted frog Agree and support this inclusion. Thorough distribution and abundance surveys will be valuable in making assumptions about effects to amphibians with regards to changes in water quality.
The aquatic effects pathways should include effects to tissue metals concentrations, particularly Se, which is known to bioaccumulate up the food web. As written, it appears the only effects to benthic invertebrates, amphibians, fish and aquatic feeding birds are associated with potential effects to abundance and diversity. Additionally, where receptors are being assessed under a different VC (i.e., Wildlife) very clear reference should be made to where the receptor is being assessed and how that information will be used to inform the Aquatic Resources VC .
VC: Benthic invertebrates As indicated in previous comments a thorough description of endpoints (i.e., tissue metals) will give reviewers confidence that the appropriate VC and Sub-Components have been selected.
Birds [monitor air, water, and sediment quality as indicators for Se or other metals; any destructive sampling for tissue analysis would only be part of regional programs] This information should also be reflected in table 6-1. This is the first mention of a Se effects assessment, or bird egg sampling and should be reflected in the Aquatic Resources VC.
Amphibians and Reptiles Please ensure table is updated to reflect inclusion of Spotted Frog. As written, the table makes it unclear on whether or not amphibians will be considered within the Aquatic Resources VC effects assessment.

Wetland	No response required.
Wildlife health	Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches, including Columbia spotted frog.
NA	Aquatic health has been added as a VC subcomponent and will include an aquatic life risk assessment that will assess health risks from potential contaminants for each aquatic niche. The potential effects has been revised as follows: Changes in water and/or sediment quality and quantity can result in reduced abundance, diversity, distribution, and/or fewer sensitive species of benthic invertebrates. Changes in benthic invertebrate species and populations as well as changes in the concentration of selenium and other contaminants in tissues. Potential adverse effects on habitat, distribution, and health of aquatic plants, invertebrates, and fish.
NA	Appendix A has been revised.
NA	Appendix A has been revised.
NA	Appendix A has been revised.

NA
Table 5-1
Table 5-1 and Table 6-1
Michel Coal Project removed from table to remove duplication and inconsistencies.
Michel Coal Project removed from table to remove duplication and inconsistencies.
Michel Coal Project removed from table to remove duplication and inconsistencies.

Comment addressed.
Commend addressed.
Comment addressed.
Comment Addressed.
Comment Addressed.
Comment Addressed.

No response needed.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA

15	MECC 15	3/27/2019	Kyle Terry	
16	MECC 16	3/27/2019	Kyle Terry	
17	MECC 17	3/27/2019	Kyle Terry	
18	MECC 18	3/27/2019	Kyle Terry	
19	MECC 19	3/27/2019	Kyle Terry	
20	MECC 20	3/27/2019	Kyle Terry	
21	MECC 21	3/27/2019	Kyle Terry	

3.1
4.7.1
Table 5.1
Table 6.1
Section 7.2.1
Section 7.2.1
Section 7.2.1

Issues Scoping Exercise The absence of explicit reference to the Elk Valley Water Quality Plan in this list seems like a gap. Please include where appropriate.
Elk Valley Water Quality Plan This section should also clearly indicate that the Elk Valley Water Quality Plan applies to all mining operations within the Elk Valley, despite only being initially developed for the five referenced facilities.
Surface water quality The Water Sustainability Act regulates the use of surface water while the Environmental Management Act regulates discharge to surface water.
Surface water quantity Will need to consider temporal and spatial variability of water quantity and changes to water quantity. To be detailed further in the AIR.
extending upstream into the Alexander Creek watershed enough to incorporate any variability in groundwater due to the potential for limestone karst surficial geology . Modify LSA to incorporate
It is expected that North Coal will be required to meet standards ....Due to current drinking water quality risks at Sparwood that could be exacerbated by this project, it is expected that NC will also model water quality at the mouth of Michel Creek. Water quality prediction locations and requirements will be discussed and detailed further within the AIR.
North Coal cannot compute contributions to Lake Koocanusa ... North Coal has been provided with the required outputs from the EVWQP to model water quality in Koocanusa Reservoir. NC will be required to develop water quality model predictions in the reservoir, as will be documented in the AIR.

NA	Section 3.1 refers to the regional management plans. Section 4.7.1 is explicit in reference to the Elk Valley Water Quality Plan.
NA	The Elk Valley Water Quality Plan application to the project will be more fully discussed in the Application.
Surface water	The text pertaining to the Water Sustainability Act in the Source column of Table 5-1 has been changed to the text provided in the comment.
Surface water	No response required.
NA	The LSA has been revised in Figure 7-2.
Surface water	No response required.
Surface water	More discussion is required to define requirements for the AIR. Data are available to predict concentrations and loadings from the Project at the inlet to Lake Koocanusa.

NA
NA
Table 5-1
NA
Figure 7-2
NA
Section 7.2.1

Comment Addressed.
Comment Addressed.
Comment Addressed.
Comment Addressed.
Comment Addressed.
It appears that in response to this comment and the following comment, North Coal added a half-page of new text to Section 7.2.1. My response to this added text is as follows: Please remove all added text. Justification for LSA and RSA boundaries are sufficient without this discussion. Specific modelling requirements will be detailed in the AIR. Additionally, please consider the following when discussing/reporting on this topic in future. 1. Please do not refer to a Water Quality Attainment Point in any EAC application documentation. North Coal does not have an attainment point. The location of a possible "attainment point" will be determined by ENV during the permitting process. At the EAC stage the Michel 13 location is simply a water quality modelling node where NC will model project related effects in Michel Creek. 2. Michel 1. Water quality modelling requirements will be determined as part of the AIR. If NC is required to model water quality at this location as part of the AIR then it is expected you will do so. 3. The title of the RG_DSELK_Inflow is likely a bit misleading. This modelling location is IN the reservoir, downstream of the Elk River. It assumes complete mixing with the Kootenay River. Modelling with these data will meet the requirement of modelling water quality in the Koocanusa Reservoir.
See round 2 response above.

No response needed.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA
Text has been removed as requested and comments noted for modeling and future documents.	Y
No response needed.	NA

	22	MECC 22	3/27/2019	Sarah Alloisio	
	23	MECC 23	3/27/2019	Sarah Alloisio	
	24	MECC 24	3/27/2019	Sarah Alloisio	
KNC					
	1	KNC 1	4/8/2019	Bernadette Lyons	25
	2	KNC 2	4/8/2019	Bernadette Lyons	30
	3	KNC 3	4/8/2019	Bernadette Lyons	31

Table 5.1
Table 6.1
Table 6.1
Table 5-1 Groundwater (quantity and quality)
Table 5-1 Drinking Water
Missing Word

Groundwater (Quality and Quantity) Water Sustainability Act prohibits use of and discharges to groundwater unless authorized. Legislation administered by BC Ministry of Environment and Climate Change Strategy. Correct the text as follows “Use of groundwater is regulated under the WSA and discharge to groundwater is regulated under EMA”.
Groundwater (Quality and Quantity) Potential effects of pit dewatering on the groundwater discharge to streams (baseflow) should be included in the assessment. Reductions in baseflow should also be assessed in terms on potential alteration in the physical and chemical attributes of the hyporheic zone, and their ultimate effects on fish habitat. Assessment requirements will be outline in the AIR.
Groundwater (Quality and Quantity) Recommended indicator Recommended indicators / endpoints should include assessment of changes in groundwater quality relative to BC and Canadian water quality guidelines and the quality objectives set in the Elk Valley Water Quality Plan.
The "source" column only address groundwater quantity. The quality of groundwater leaving the project site is measurable and regulated through BC Environmental Management Act, Contaminated Sites Regulation (CSR). The CSR defines specific groundwater quality criteria that would facilitate a significance assessment for groundwater quality. Information on groundwater quality should be added to the table.
Although Human Health/Drinking Water is covered by the surface water and groundwater Intermediate VCs; there, nevertheless, needs to be a water related Receptor VC for Human Health. In Table 6.1 Country Food/Drinking Water is listed as a Receptor VC, that should be reflected here.
Intermediate VCs will be assessed for significance where they can be measured using established criteria, objectives or guidelines.

Groundwater	The text pertaining to the Water Sustainability Act in the Source column of Table 5-1 has been changed to the following: Use of groundwater is regulated under the Water Sustainability Act and discharge to groundwater is regulated under Environmental Management Act.
Groundwater	These potential effects will be part of the assessment to be defined in the AIR.
Groundwater	Groundwater indicators / endpoints has been revised to the following: changes in groundwater quality relative to BC and Canadian water quality guidelines and the quality objectives set in the Elk Valley Water Quality Plan.
Groundwater	Indicators for groundwater in Table 6-1 has been revised as follows: Changes in groundwater quality relative to BC and Canadian water quality guidelines and the quality objectives set in the Elk Valley Water Quality Plan. Compliance of groundwater quality with BC Environmental Management Act, Contaminated Sites Regulation (CSR)..
Human health	Drinking water will be used in the assessment of community health. The indicators for human health has been revised as follows: Changes in human exposure to mine-related COPCs related to changes to air, soil, surface water, groundwater, or sediment quality or changes in plant or animal tissue chemistry (quality) and compliance with drinking water standards.
NA	BC EAO has indicated that Intermediate VCs will not be assessed for significance, only for context, magnitude, extent, duration, reversibility, and frequency.

Table 5-1

Table 6-1

Table 6-1

Table 6-1

Section 6

Comment Addressed.
Comment Addressed.
Comment Addressed.
No additional comment, other than Column L on this worksheet should say Table 5-1
No additional comment, other than Column L on this worksheet should say Table 5-1
No additional comments

No response needed.	NA
No response needed.	NA
No response needed.	NA
Cell L5 has been changed from Table 6-1 to Table 5-1.	Y
Cell L5 has been changed from Table 6-1 to Table 5-1.	Y
No response needed.	NA

4	KNC 4	4/8/2019	Bernadette Lyons	32
5	KNC 5	4/8/2019	Bernadette Lyons	32
6	KNC 6	4/8/2019	Bernadette Lyons	37
7	KNC 7	4/8/2019	Bernadette Lyons	40
8	KNC 8	4/8/2019	Bernadette Lyons	40
9	KNC 9	4/8/2019	Bernadette Lyons	40

Table 6-1 Groundwater (quantity and quality)
Table 6-1 Surface Water Quantity
Figure 6-2: Terrestrial Effects Pathways
7.2.1 Aquatic Resource Boundaries
7.2.1 Aquatic Resource Boundaries
7.2.1 Aquatic Resource Boundaries

Groundwater quality is covered in the Elk Valley Water Quality Plan and should meet the applicable BC and Federal water quality guidelines. The comment, "relative to BC and Canadian and/or site-specific standards consistent with the Elk Valley Water Quality Plan, any other regional plans to protect downstream water quality.", noted in the table for surface water quality should also be included for groundwater quality.
Environmental flow needs of the tributary or main stem watercourses need to be met. If the project could reduce the flow below the EFN that would be a quantifiable water quantity effect.
Does not mention drinking water in the text box on human health.
This section is not clear. The section should be reviewed and rewritten with more detail to improve clarity .
"The local study area (LSA) for aquatic resources is the Michel Creek watershed extending upstream into the Alexander Creek watershed enough to incorporate any variability in groundwater due to the potential for limestone karst surficial geology." There are a few problems with this sentence: 1) The LSA is the Michel Creek watershed upstream of Michel 13, not the whole watershed as is implied, and 2) The **bedrock** at the confluence of Michel Creek and Alexander Creek is mapped as limestone with a high karst potential. If karst is present, groundwater may not follow the surface water flow patterns in this area, opening up the possibility for groundwater from the Michel Coal site to flow into the Alexander Creek watershed. As noted above this section should be rewritten with more detail for clarity.
"The aquatic study boundaries extend downstream to include areas that may be affected by the Project, but not by Teck mines other than Coal Mountain." This sentence should refer to the LSA only which is not clear the way it is written.

Groundwater	Text under groundwater indicators has been revised to read as follows: Changes in groundwater quality relative to BC and Canadian water quality guidelines and the quality objectives set in the Elk Valley Water Quality Plan. Compliance of groundwater quality with BC Environmental Management Act, Contaminated Sites Regulation (CSR)..
Surface water	Environmental flows have been added to the indicators / endpoints for surface water as follows: Maintenance of environmental flow needs in streams and tributaries.
Human health	Drinking water has been added under human health in Figure 6-2.
NA	The text has been revised to clarify monitoring / potential compliance points and Lake Koocanusa.
NA	The LSA has been revised in Figure 7-2 to capture the potential groundwater contributions.
NA	The text has been revised as follows: The aquatic LSA boundaries extend downstream to include areas that may be affected by the Project, but not by Teck mines other than Coal Mountain.

Table 6-1
Table 6-1
Figure 6-2
Section 7.2.1
Figure 7-2
Section 7.2.1

No additional comments
The EFN comment was added to the wrong row in the table. Should be one row below in the Surface Water Quantity row. EFN is a quantifiable benchmark therefore a significance assessment should be included. i.e. is the EFN currently being met? and will the EFN be met over the life of the project?
No additional comments
The clarity of this section has been greatly improved, however a few errors remain
Suggested changes noted in red. The local study area (LSA) for aquatic resources is the Michel Creek watershed extending upstream into the Alexander Creek watershed enough to incorporate any variability in groundwater flow direction due to the potential for limestone karst bedrock geology
No additional comments

No response needed.	NA
"Maintenance of environmental flow needs in streams and tributaries." has been moved from surface water quality to surface water quantity.	Y
No response needed.	NA
Responses recorded in next comment.	NA
The text in Section 7.2.1 has been revised as requested to read, "The local study area (LSA) for aquatic resources is the Michel Creek watershed extending upstream into the Alexander Creek watershed enough to incorporate any variability in groundwater flow direction due to the potential for limestone karst bedrock geology."	Y
No response needed.	NA

10	KNC 10	4/8/2019	Bernadette Lyons	40
11	KNC 11	4/8/2019	Bernadette Lyons	40
12	KNC 12	4/8/2019	Jesse Sinclair	iii and 26

7.2.1 Aquatic Resource Boundaries
7.2.1 Aquatic Resource Boundaries
Valued Components

"It is expected that North Coal will be required to meet standards under the new coal mining regulations that are proposed to be more stringent than the water being released into Michel Creek and the Elk River; therefore, North Coal performance can be measured locally at Michel 13 and the first EVWQP point downstream of the confluence with Alexander Creek." It is unclear what "proposed to be more stringent than the water being released into Michel Creek and the Elk River" means here. My understanding is that the expected compliance point for the new coal mine regulations will be, at the point of discharge. Is this sentence trying to convey that Michel 13 is the EVWQP control point that best reflects the proposed Michel Coal Project's point of discharge?

"North Coal cannot compute contributions to Lake Koocanusa as it does not have access to the EVWQP Model; however, Lake Koocanusa will be included in the RSA when considering potential cumulative effects and effects to fish." Are the "contributions" in this sentence meant to refer to contaminant loading? Needs clarification.

Consider the inclusion of tributary ecosystems (under the *aquatic environment* pillar) as a Valued Component (VC). This would be analogous to the terrestrial ecosystems (avalanche, grassland, wetland, riparian and flood, old and mature forest) under the *terrestrial environment* pillar.

During the development of the Elk Valley Water Quality Plan (EVWQP) it was recognized that management goals for un-impacted tributaries, while important, could not be developed due to a lack of data and information on these ecosystems. A condition of *EMA* Permit 107517 was added to evaluate and manage tributaries in the Elk Valley such that "*tributaries that are not impacted by mining activities, that provide relatively high habitat value, and/or support ongoing habitat use by fish and sensitive aquatic dependent wildlife (i.e., directly or indirectly through food production) shall be identified as the highest priority tributaries for permanent protection*". From KNC's perspective permanent protection would include conservation of the existing ecological state of aquatic and riparian habitats without: 1) degradation of any physical, chemical, or biological quality, including ecosystem structure and function; or 2), any detriment to cultural values or the exercise of rights, and title interests.

Based on our current understanding, Management Units 1 (the Upper Fording River catchment) and 4 (the catchment from the confluence of the Elk and Fording Rivers down to the confluence of Michel Creek and the Elk River, including Michel Creek) are at highest risk due to existing tributary loss.

NA	Text on the Coal Mining Effluent Regulations has been modified as follows: It is expected that North Coal will be required to meet standards under the new Coal Mining Effluent Regulations that are proposed to be more stringent (i.e., to meet the expected discharge limits for selenium of 5 µg/l mean monthly and 10 µg/l in a grab sample) than the water being released into Michel Creek and the Elk River.
NA	The text has been revised as follows: North Coal has been provided data that will allow it to compute selenium loadings and concentrations at the inlet to Lake Koocanusa.
Aquatic environment	The tributaries are already captured under the riparian and flood ecosystems and the fish and fish habitat assessment.

Section 7.2.1
Section 7.2.1
NA

No additional comments
No additional comments
The capture of tributaries under the riparian and flood ecosystems is not explicit in the VC document. If they are covered, please identify the endpoints and/or indicators that will be used to assess this component. That being said, the intent of the recommendation to include *tributaries* as a VC is to ensure that a holistic assessment of changes to currently unimpacted tributaries is included. This type of analysis would integrate the data and information on predicted changes to physical (e.g., fish habitat, calcite), chemical (e.g., surface water and sediment quality) , and biological (fish community and health, benthic invertebrate community and tissue quality) components to ensure that unimpacted tributaries with relatively high habitat value remain permanently protected as per Permit 107517 and importantly, a condition of KNC acceptance of the Elk Valley Water Quality Plan. Teck has compiled data and information detailing available tributary habitat within the designated area to support the Tributary Evaluation Program (TEP). In MU-4 (Michel Creek) there are a number of unimpacted tributaries that have been identified. Therefore, it is KNC's expectation that: 1) North Coal seeks the data and information generated on tributaries in MU-4; 2) cross-references the project affected tributaries with the TEP results; and 3), works with KNC to define protection goals for unimpacted tributaries with relatively high habitat value (as identified in the TEP).

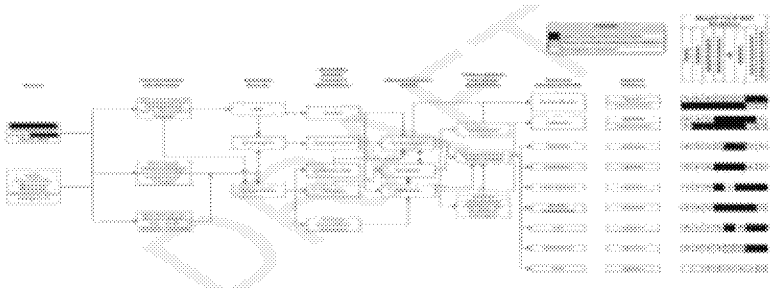
No response needed.	NA
No response needed.	NA
Teck's Tributary Evaluation Program (TEP) was completed for their permit condition as part of their management plan. It is acknowledged that maintaining tributaries for algae, benthic invertebrates and fish is important. One of the guiding criteria for the Michel Coal Project design has been to avoid tributaries and fish habitat as much as possible. In addition, the federal Fisheries Act is formulated to protect fish habitat and DFO's policy is to achieve no net loss of habitat; therefore, tributary protection is required and will be integrated into the design and management programs for the project. As such, inclusion of tributary protection as an indicator is not required.	NA

13	KNC 13	4/8/2019	Jesse Sinclair	11 and 12
14	KNC 14	4/8/2019	Jesse Sinclair	Section 6
15	KNC 15	4/8/2019	Jesse Sinclair	25 and 26
16	KNC 16	4/8/2019	Jesse Sinclair	26
17	KNC 17	4/8/2019	Jesse Sinclair	32

Section 2.1 (Project Information
Assessment Endpoints
Valued Components
Valued Components
Valued Components

Section 2.1 (Introduction) provides background information, identifies key features of region, and a short summary of project components. However no reference to the EVWQP is included. Considering that the project must adhere to the EVWQP this document should be referenced along with the commitment to adhere with the plan.

I would like to see a fulsome conceptual site model (CSM) be developed to identify the assessment endpoints (things that we are trying to protect) and measurement endpoints (the metrics that will be measured to evaluate effects on the assessment endpoints. An example CSM is:



Aquatic Resources are included as a VC; however, it is implied that evaluation will be based on benthic invertebrate and fish abundance and diversity. The quality of these resources (e.g., tissue quality) should be included in the assessment of this component. In addition, the scope of this value component should include other ecological receptors include periphyton and aquatic-dependent wildlife (e.g., amphibians, birds, and mammals).

The *westslope cutthroat trout* VC should also be evaluated in the context of the objectives of the EVWQP, specifically with respect to selenium bioaccumulation (also applicable to other fish in the catchment).

With respect to the algae subcomponent, mine related impacts may include *increased* abundance, or introduction of invasive species (e.g., didymo).

NA	Section 4.7.1 provides reference to the EVWQP. Commitments will be made in the Application.
NA	The purpose of the VC document is to define the scope of assessment and has followed the provincial guidance document. Full development of endpoints will occur during development of the AIR and the environmental assessment.
Aquatic resources	Algae have been added as a VC subcomponent. Other aquatic dependent wildlife will be assessed elsewhere.
Westslope cutthroat trout and aquatic health	Water quality is part of the assessment of effects on westslope cutthroat trout and is also covered by the addition of aquatic health as a VC.
Algae	Text on potential effects has been revised as follows: Changes in water and/or sediment quality and quantity can result in reduced abundance, diversity, distribution, increased abundance, introduction of invasive species (e.g., didymo), and/or fewer sensitive species of aquatic plants.

Section 4.7.1
NA
Table 5-1 and Table 6-1
Table 5-1 and Table 6-1
Table 6-1

That will be satisfactory provided that comparisons of the indicator and endpoint metrics (e.g., water quality) with EVWQP benchmarks/goals are explicitly identified in the VC table.
I am satisfied with this level of detail be discussed in the AIR.
It is KNC's expectation that tissue quality (i.e., contaminant concentrations in benthic invertebrate and fish tissue) be included as an indicator/endpoint to assess project-related effects on fish and aquatic-dependent wildlife. In the current version of the VC document, tissue quality is not yet included. There are published (i.e., EVWQP) site-specific Se bioaccumulation models to facilitate this evaluation.
The EVWQP is designed to keep WCT reproductive effects below 10% at a MU level (among other objectives). It is KNC's expectation that project-related effects on Se bioaccumulation in WCT are evaluated in the context of the larger MU to ensure this objective will be met. There are published (i.e., EVWQP) site-specific Se bioaccumulation models to facilitate this evaluation.
Thank-you.

No response needed.	NA
No response needed.	NA
North Coal has collected both benthic and fish tissue samples for the baseline and will be used in the risk assessment, which will form part of the EA application. However, project-specific tissue quality indicators are not being proposed for ongoing monitoring because of the harm to benthic invertebrate and fish populations as a result of the cumulative effects from sampling throughout the Elk Valley. Site specific water quality criteria combined with the Se bioaccumulation models and regional sampling programs should be sufficient to identify potential for bioaccumulation effects from the project.	NA
It is expected that project-specific water quality criteria will need to conform to the EVWQP and will therefore meet the criteria of keeping WCT reproductive effects below 10% for the MU.	NA
No response needed.	NA

18	KNC 18	4/8/2019	Jesse Sinclair	32
19	KNC 19	4/8/2019	Jesse Sinclair	32
20	KNC 20	4/8/2019	Jesse Sinclair	33
21	KNC 21	4/8/2019	Jesse Sinclair	40
22	KNC 22	4/8/2019	Marlene Machmer	P. 26
23	KNC 23	4/8/2019	Marlene Machmer	P. 27

Valued Components
Valued Components
Valued Components
Water Quality Modelling
Environment/Terrestrial Environment; Table 5.1
Environment/Terrestrial Environment; Table 5.1

Include selenium tissue concentrations for the benthic invertebrate and algal subcomponents as an indicator/endpoint considering the objectives of the EVWQP.
Evaluations of benthic invertebrate and algal endpoints should be done at the local (i.e., upstream reference), when available, as well as the at the regional level. In addition, the use of the term *regional monitoring efforts* is unclear. Is the intent to establish a regional reference pool for use in the evaluation?
The *Fish and Fish Habitat* subcomponent should reference (and therefore evaluate) selenium bioaccumulation explicitly, considering the objectives of the EVWQP.
As mentioned at the last meeting, I strongly urge the regulators to facilitate access to data and information needed for a comprehensive water quality model for the areas downstream of the proposed project. North Coal is required to comply with the EVWQP and currently cannot complete a fulsome characterization of effects without understanding how any incremental load of the order constituents may increase risk in the aquatic environment.
As a point of clarification, are culturally important plants only being considered in section C?
Just want to confirm that "grassland" in this context refers to the "grassland group" on page 352 of Land Management Handbook 71. Field Guide to Ecosystem Classification and Identification for Southeast BC: The east Kootenay, by MacKillop et al. 2018. As such, it would include 4 classes of grassland/brushland included in that classification, several of which are list; please confirm?

Aquatic health	Aquatic health has been added as a VC. Locally, populations metrics and abundance will reflect chronic effects from contaminants without requiring additional destructive sampling for tissue metals. North Coal will work within regional monitoring programs to minimize the effects of destructive sampling on the resident aquatic populations.
Benthic invertebrates and algae	Locally, populations metrics and abundance will reflect chronic effects from contaminants without requiring additional destructive sampling for tissue metals. North Coal will work within regional monitoring programs to minimize the effects of destructive sampling on the resident aquatic populations.
Aquatic health and fish and fish habitat	Aquatic health has been added as a VC to more clearly assess selenium bioaccumulation in fish. The indicators for aquatic health have been added as follows: Potentially significant acute or chronic effects on aquatic life based on the ecological risk assessment.
Surface water	No response required.
NA	No culturally important plans have been requested by KNC; therefore, it is assumed they will be considered only in section C.
Grassland	Yes, grassland is based on the ecosystem classification.

Table 5-1 and Table 6-1
Table 6-1
Table 6-1
NA
NA
NA

The intent for measuring Se tissue concentrations in benthic invertebrates and algae is to support evaluations of dietary exposure in fish and aquatic-dependent wildlife rather than chronic effects to the benthic invertebrate and/or algae. I agree that community metrics and abundance will reflect chronic effects related to contaminants with a direct mode of toxicity (e.g., metals), but not for Se.
It is unclear how community metrics and abundance will be evaluated "non-destructively". Typically benthic invertebrate/periphyton sampling requires samples to be collected, preserved, and sent off-site for taxonomy and analysis. In addition, my original comment appears to be misunderstood. KNC's expectation is that changes in benthic invertebrate and algal endpoints (e.g., biomass, %EPT, richness) are evaluated against upstream references when available, in addition to any regional models (e.g., using the reference condition approach). This discussion may be best suited for the AIR stage; however, it is KNC's expectation that the concept of local (i.e., upstream) comparisons is brought into the VC table.
Again, the EVWQP is designed to keep WCT reproductive effects below 10% at a MU level. This context must be considered in the evaluation. To avoid confusion, please use effects assessment rather than ecological risk assessment, which is typically a formalized process.
No response required.

Assessment of Se effects and bioaccumulation will be included in the aquatic health risk assessment and the wildlife health risk assessment. Site specific water quality criteria combined with the Se bioaccumulation models and regional sampling programs should be sufficient to identify potential for bioaccumulation effects from the project.	NA
North Coal has collected both benthic and fish tissue samples for the baseline and will be used in the risk assessment, which will form part of the EA application. Community metrics and abundance are measured with destructive sampling; however, additional destructive samples are needed for tissue metals since the inventory samples cannot be used for metals analysis once they are preserved. The "Regional monitoring program" was a remnant of a past edit. The text has been revised to read, "Changes in distribution, diversity indices, EPT index, and community structure relative to baseline and local reference tributaries. Changes in water quality will be used to predict changes in tissue metals."	Y
It is expected that project-specific water quality criteria will need to conform to the EVWQP and will therefore meet the criteria of keeping WCT reproductive effects below 10% for the MU. To avoid confusion, the text in Table 6-1 has been modified to refer to aquatic health risk assessment rather than ecological risk assessment.	Y
No response needed.	NA
No response needed.	NA
No response needed.	NA

24	KNC 24	4/8/2019	Marlene Machmer	P. 27
25	KNC 25	4/8/2019	Marlene Machmer	P. 27
26	KNC 26	4/8/2019	Marlene Machmer	P. 28
27	KNC 27	4/8/2019	Marlene Machmer	P. 28

Environment/Terrestrial Environment; Table 5.1
Environment/Terrestrial Environment; Table 5.1
Environment/Terrestrial Environment; Table 5.1
Environment/Terrestrial Environment; Table 5.1

Please note that mature and old forests these are 2 separate concepts (hence the plural) and each has separate requirements or "targets" under the KBLUP Higher Level Plan Order (HLPO), hence thy cannot be lumped with respect to assessment against legal targets. This has been a real source of confusion for CEMF (which was eventually corrected) and also previous assessments because assessors have not understood that there are mature targets, old targets, and then lumped "mature and old" targets, but the lumped ones can only be considered once all the old targets have been met first within a landscape unit, as acknowledged in the HLPO and Biodiversity Guidebook (BGB). It would be worthwhile to fully clarify this with Regional Ecologist (Deb MacKillop) to ensure that it is correct to avoid revisions.
How will this project address listed small mammals like red-tailed and least chipmunk without undertaking any surveys for these species? They have good potential to occur in exactly the types of habitats that are being mined. Red-tailed chipmunk is a nocturnal species that breeds in rock and talus-dominated grassland, brushland, or sparsely forested habitats in alpine and sub-alpine. It is challenging to design appropriate mitigation unless you know where they occur and this is an info gap.
NOGO has been excluded as a VC so this comment regarding NOGO under WSOW rationale no longer stands. is not accurate.
May want to state that these raptors are "top of the food chain" terrestrial predators and many species are known to breed and overwinter in the watershed in a range of ecosystems (riparian, grassland, forest, wetland). Also, the surrounding areas are known to support a very high abundance and diversity of migratory raptors, based on counts conducted annually at raptor migration stations (feeds into migratory bird VC).

Mature and old forests	The assessment will take these variations in targets into consideration and separate the two where needed.
Species of conservation concern	The baseline surveys have been comprehensive and attempt to identify as many species as possible that occur in the project area. From this, knowledge of life requisites for each species and habitat mapping for the project area will be used for the assessment and to determine mitigation and management strategies.
Northern goshawk	Northern goshawk has been maintained as a VC subcomponent after reconsideration of comments on raptors, interactions with the project, and how raptors can be assessed.
NA	Raptor subcomponents have been reconsidered. Northern goshawk and cliff nesting raptors will be assessed. There is a weak linkage of effects between migratory raptors and the project activities; therefore, migratory raptors are not included as a subcomponent.

NA
NA
Table 5-1 and Table 6-1
Table 5-1 and Table 6-1

Unless the baseline surveys involved small mammal trapping in suitable habitat, conducted at night (for red-tailed chipmunk) and unless animals were examined in the hand (for least chipmunk), it would not be possible to detect presence of these two listed species. Was this done and if not, how can the proponent be confident about the occurrence, abundance and distribution of these species, potential impacts of mining and appropriate mitigation. How does one actually mitigate for excavating a habitat, other than doing a trapping program and relocating animals to suitable habitat given that they would be in burrows during the day (red-tailed chipmunk)?
So will NOGO receive a full assessment including field sampling using call playback, habitat suitability modeling, and significance determination?
In a cumulative effects context, and bearing in mind the need for raptors to stop and feed on route during migration, the large cumulative footprint of mining and other developments is progressively reducing options for raptors moving through, which are energetically constrained and must find specific foods in certain microhabitats. I disagree with this opinion. Please list which cliff-nesting raptors are being considered?

No response needed.	NA
Baseline trapping studies have not been completed to date and are not needed due to North Coal's proposed relocation program before excavation. A trapping and relocation program is likely a key mitigation for the small mammals of conservation concern, in combination with minimizing the footprint of disturbance and progressive reclamation.	NA
Yes, targeted baseline surveys (including call playback), an assessment of habitat effects, and significance determination are planned to be completed for Northern goshawk.	NA
For clarity and in agreement with the reviewer comment, North Coal is assessing Northern Goshawk, cliff nesting raptors and migratory birds which includes migratory raptors as valued subcomponents. The species of cliff-nesting raptors considered will depend on the results from the field surveys.	NA

28	KNC 28	4/8/2019	Marlene Machmer	P. 29
29	KNC 29	4/8/2019	Marlene Machmer	P. 30.
30	KNC 30	4/8/2019	Marlene Machmer	P. 31
31	KNC 31	4/8/2019	Marlene Machmer	P. 33
32	KNC 32	4/8/2019	Marlene Machmer	P. 36

Environment/Terrestrial Environment; Table 5.1
Environment/Terrestrial Environment; Table 5.1
Selected Intermediate and receptor VCs: Section 6, 2nd paragraph
Table 6.1, Mature and old Forests
Visual Aesthetics (Visual Quality Objectives and targets)

Since wildlife health has been eliminated as a VC, it is unclear how/if North Coal will link the terrestrial VCs it has proposed to toxicity levels and thresholds for Se? In Pathways Figure 6.1, there is only human health, but indicators for invertebrate, fish, amphibian and bird VCs are only population abundance and diversity rather than indicators such as condition and tissue/egg toxicity linked more directly to Se loads. Please confirm that VCs like spotted frog, western toad, spotted sandpiper, American dipper, as well as fish species proposed here will be linked to selenium toxicity thresholds for wildlife species health and to water quality and Se concentrations directly? Please clarify if North Coal relying on other regional initiatives to evaluate Se toxicity to wildlife VCs or will it be undertaking work in the Michel Creek watershed directly to assess this?
The technical term for visual aesthetics is “visual quality” and in a forestry context, there are legal objectives, guidelines and targets available to assess this VC which should be included in the assessment. Please note and highlight as an assessable VC.
Please add the word “will” to complete sentence.
Please note that there are both legal and ecological thresholds and targets for mature forest and old forest VCs specified by landscape unit and BEC subzone/variant in the KBLUP Higher Level Plan Order and in the Biodiversity Guidebook which need to be assessed against, as has been done in past assessments and in the Elk Valley CEMF, so please incorporate and highlight these particular VCs as being assessed against a legal target.
Again, this should be stated as visual quality and visual quality objectives provided by government as legal guidelines and thresholds should be assessed against. Can therefore be highlighted since significance can be assessed against a target.

Wildlife health	Wildlife health has been added as a VC and a wildlife health risk assessment will be conducted to assess potential risk of contaminants using a representative species of all ecological niches.
Visual Aesthetics	Visual quality objectives will need to consider the private land timber harvest that is not in the control of North Coal. The indicators description text has been revised as follows: Maintenance of the visual character of Project site relative to the surrounding landscape in consideration of guidance on Visual Quality Objectives and private land use constraints; Visual quality assessed through visible extent of Project from receptor sites, rating of the scale and contrast including air quality.
NA	BC EAO has indicated that Intermediate VCs will not be assessed for significance, only for context, magnitude, extent, duration, reversibility, and frequency.
Mature and old forests	The following has been added to the indicators / endpoints description for ecosystems in Table 6-1: Targets for old and mature forests in the Kootenay-Boundary Higher Level Plan Order in consideration of private land use constraints.
Visual Aesthetics	Visual aesthetics will be assessed for significance

Table 5-1 and Table 6-1
Table 6-1
Section 6
Table 6-1
Table 6-1

An adequate assessment of wildlife health requires inclusion of representative members of vertebrate breeding and feeding guilds. Please state which species are being used as receptors for each guild: **Amphibians** (terrestrial: western toad and aquatic: Columbia spotted frog); **Birds** (riverine: American dipper, spotted sandpiper and wetland: ?; aerial insectivorous: OSFL?; fish-eating: ?); **Mammals** (aquatic fish-eating; river otter?; insect-eating: bats; terrestrial carnivores: many?); **Reptiles ?**
I do not understand this response and need further clarification. There are specific guidelines and indicators for visual quality management (provided in a forestry context) based on various government guidebooks and procedures: e.g., Visual Impact Assessment Guidebook (BC MOF 2001); Visual Landscape Inventory: Procedures and Standards Manual (BC MOF 1997). There are also many other sources of information to tap into to assist with a professional visual quality assessment, however the assessment should be conducted by a visual quality specialist using provincial standard methods. Please confirm that this is the case here? The indicator wording does not conform to any provincial standards as written, so please review the standards and then formulate indicators that are consistent with those.
Those targets only apply to the Crown Forest Land base, so private land is not part of the calculation in meeting of the targets, hence the private land qualifier is not needed, because it is understood that we are only talking about the CFLB to meet the targets. In addition, the biodiversity guidebook should be referenced for the target.

Azimuth's presentation provided to the working group includes information on the wildlife health risk assessment and the ecological niches and species list (see table below). Azimuth has developed a list of species based on species with adequate toxicological information combined with review of the wildlife subcomponent species lists.

NA

Ecological Niche of ROCs in WSA	Primary Diet Type for Ecological Niche	Current ROCs (VCs bold) for the MCP
Terrestrial-Feeding Mammals		
Small Herbivore	Plant-based diet	**Columbia ground squirrel**
Large Herbivore	Plant-based diet	**Rocky Mountain elk, Rocky Mountain bighorn sheep***
Small Invertivore - aerial feeders	Flying Invertebrates	**Little brown myotis***
Small Invertivore - ground-based feeders	Ground Invertebrates	Shrew
Large Omnivore	Plants, insects, carrion	**Grizzly bear**
Small Omnivore	Plant-based/insects/invertebrates	Vole
Carnivore	Animal-based diet	**American badger*, American marten, Canada lynx, Wolverine**
Terrestrial-Feeding Birds		
Small Herbivore	Plant-based diet	Dark-eyed junko
Medium Herbivore	Plant-based diet	Ruffed grouse
Invertivore - aerial feeders	Flying invertebrates	**Olive-sided flycatcher*, Common nighthawk***
Invertivore - ground-based diet	Ground Invertebrates	American robin
Omnivore	Plant-based/invertebrates/small mammals	Song sparrow
Carnivore	Animal-based diet	**Golden eagle**
Aquatic-Feeding Mammals		
Herbivore	Aquatic Plants	**Moose**
Piscivore	Fish	**River otter**
Aquatic-Feeding Birds		
Invertivore	Aquatic Invertebrates	**American dipper**
Piscivore	Fish	Belted kingfisher

Notes:
* Wildlife species listed federally or provincially due to conservation concerns.
VCs for the MCP are bold and underlined

NA

No response needed.

NA

The private land qualifier has been left in. North Coal considers this to be an important caveat given the project is located on private lands which affect what targets apply and can be met.
The target text has been revised to say, "Targets for old and mature forests in the Biodiversity Guidebook and in the Kootenay-Boundary Higher Level Plan Order in consideration of private land use constraints."

NA

No response needed.

NA

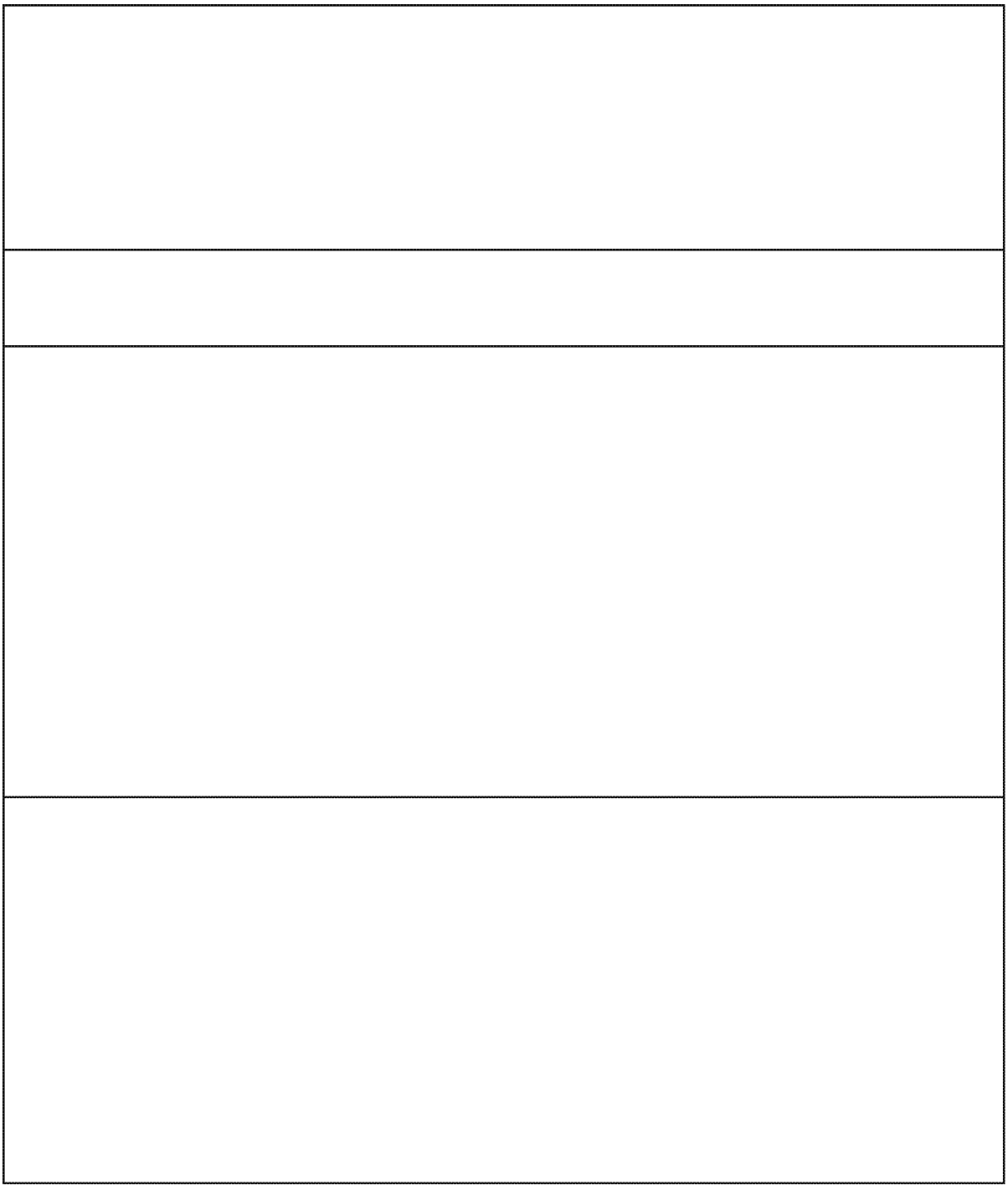
33	KNC 33	4/8/2019	Marlene Machmer	P. 36 and P. 37
34	KNC 34	4/8/2019	Marlene Machmer	P. 38
35	KNC 35	4/8/2019	Marlene Machmer	P. 40
36	KNC 36	4/8/2019	Marlene Machmer	P. 41

Impact Pathways in figures 6.1 and 6.2
Table 6.3
Section 7.2.2; Terrestrial Resource Boundaries
Section 7.2.2; Terrestrial Resource Boundaries

Effects in 6.2 seem to be totally mediated by habitat rather than attributed also to direct disturbance or displacement impacts leading to increased stress, increased energetic costs of eating/breeding, and increased mortality (including roadkill/train mortality in particular), increased loads of toxic substances and reduced condition, and population declines. Both habitat and direct effects should be addressed in this diagram. Same comment for aquatic pathways in 6.1
Where is forestry and non-timber forest products as a commercial activity considered here?
". Note that there are some species which may be best served by the large RSA (Northern Goshawk, for instance) or by an intermediate LSA, based on their breeding territory sizes, such as many diurnal raptors.
I am still unclear on which species will be classified as being ok with the small LSA, and which not. Has this been classified somewhere? Thanks.

NA	Disturbance and displacement have been added to project activities in the aquatic and terrestrial diagrams.
NA	Forestry and non-timber forest products are part of commercial and non-commercial land use.
NA	Two sets of boundaries were chosen for wildlife boundaries to help simplify the assessment. The following text has been added to Section 7.2.2: Wildlife VC subcomponents considered wide-ranging species include lynx, wolverine, badger, elk, bighorn sheep, and grizzly bear. All others will be assessed at the study areas for small-ranging species. Implications of the scale of assessment relative to the study areas will be discussed in the application to provide context as needed specific to each species' ecology.
NA	The following text has been added to Section 7.2.2: Wildlife VC subcomponents considered wide-ranging species include lynx, wolverine, badger, elk, bighorn sheep, and grizzly bear. All others will be assessed at the study areas for small-ranging species. Implications of the scale of assessment relative to the study areas will be discussed in the application to provide context as needed specific to each species' ecology.

Figure 7-1 and Figure 7-2
NA
Section 7.2.2
Section 7.2.2



No response needed.	NA
No response needed.	NA
No response needed.	NA
No response needed.	NA

	37	KNC 37	4/8/2019	Katherine Morris	Table 5.1 and table 6.1
	38	KNC 38	4/8/2019		
BCEAO					
	1	BCEAO 1	4/8/2019	Julia Taylor	
	2	BCEAO 2	5/24/2019	T Morris	General
	3	BCEAO 3	5/24/2019	T Morris	General
	4	BCEAO 4	5/24/2019	T Morris	General
	5	BCEAO 5	5/24/2019	T Morris	General

KNS Rights VC
Section 7.2.1 (Aquatic Resources Boundaries)

KNC has requested that the proposed VCs of Indigenous Knowledge and Use be replaced with the following:

Ktunaxa Rights: Traditional Knowledge and Language
- Ktunaxa Language, Knowledge Transmission

Ktunaxa Rights: Lands and Resources
- Ktunaxa use of lands and resources; All living things (including bison, fur bearers, fish); Cultural ecosystems; Ktunaxa stewardship.

Ktunaxa Rights: Economic
- Economic rights and mineral resources; Ktunaxa economy (subsistence and commercial) including contracting; Economic disparity

Ktunaxa Rights: Social
- Ktunaxa determinants of health including housing and community wellness; Confidence in wild foods

Ktunaxa Rights: Employment and Education
- Employment; Education

Please clarify the names of all of the VCs to which the Aquatic Resources boundaries apply. There is a VC named "Aquatic Resources" so this section name is confusing.

-	No change made due to uncertainty if this was in Part C or in the VC document. It was later clarified that this should be added to the VC document and that the VC would be evluated in Part C of the EA.
NA	The title has been revised to Aquatic Environment Boundaries

-

Table 5-1 Ecosystems

Section 7.2.1

KNC requested that Rights VCs be incorporated. (08 May 2019)

KNC requested that "wetland" be removed from the effects description that says, "Change in abundance and distribution of blue- and red-listed wetland ecological communities."
KNC also questioned whether the discussion on selenium toxicity in plants should be included in the rare plants. Specifically the text that says, "Changes in the concentration of selenium and other contaminants in plant tissues, and their toxicity effects on plant health and growth."

There is information in the Document that relates to both the Project Description (PD) and the draft Public Consultation Plan (PCP) – please ensure information in the Document is consistent with the PD (or identify where it is not) and ensure the same level of detail relating to public consultation is contained in the next version of the PCP. I have marked these relevant sections in the attached document.

I did not see any information regarding conducting a human health risk assessment for the health pillar – this is a usual undertaking for EA.

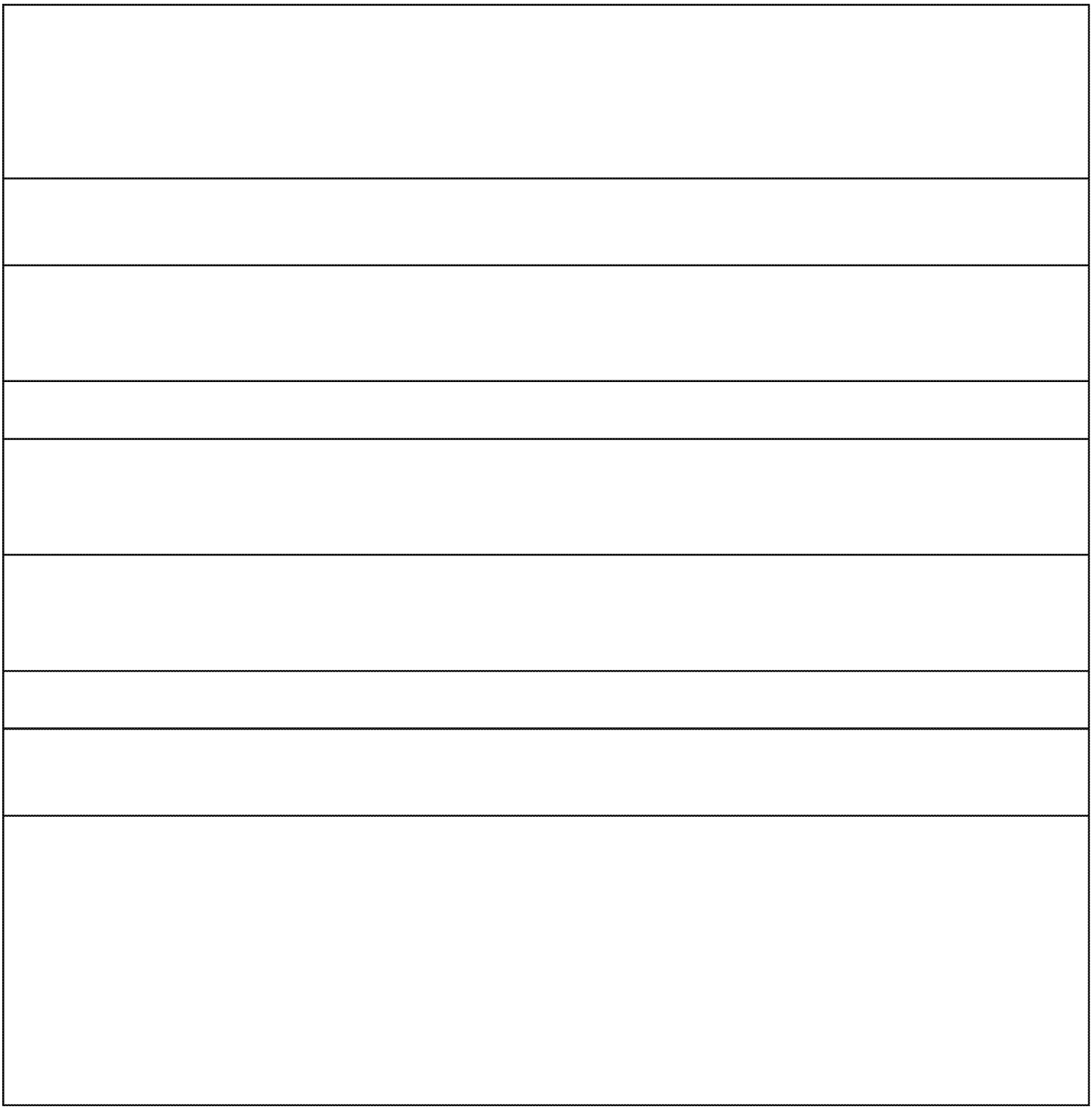
EAO's guidance regarding intermediate components and whether or not there is a significance determination appears to have not been followed. As discussed with North Coal a few weeks back, following EAO guidance or highlighting to EAO in advance where you may deviate from this guidance so we may have a discussion, is important for moving forward in the EA in a timely manner. EAO anticipates a more fulsome discussion regarding its methodology/how significance may be determined during the AIR stage and has suggested wording changes and changes to Table 6.1 to reflect this.

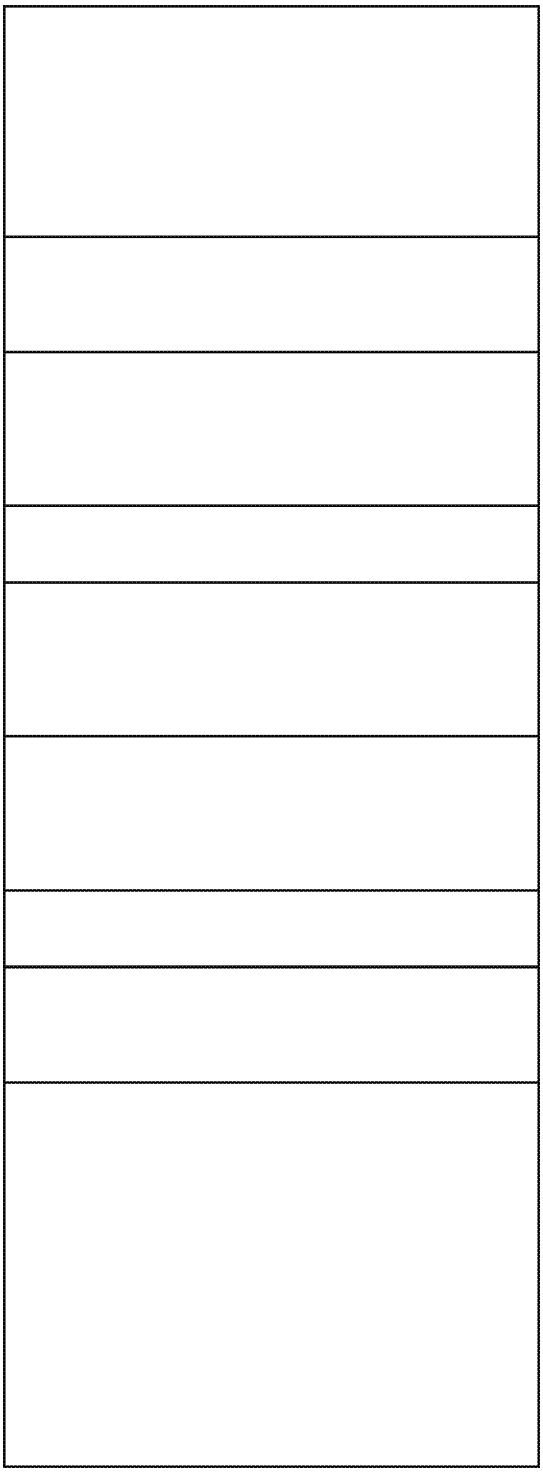
There are two additional follow-ups by EAO related to providing you with draft wording for the preface of the Document that would go to public comment and confirming the IPA wording on the EVWQP.

VCs added	Yes
Revised to say "Change in abundance and distribution of blue- and red-listed ecological communities." With respect to selenium toxicity, North Coal left the text under effects on ecosystems since it applies to all vegetation types and not just rare plants.	Yes
No response needed.	NA
The VC document is consistent with the Project Description. Information will be consistent with the Public Consultation Plan.	NA
Text was added in Table 5-1 under further rationale to say, "A human health risk assessment will be completed to assess community health."	Y
Wording changes for consistency with EAO guidance have been made as presented in the responses below.	Y
Preface information provided Pending IPA wording on EVWQP	

6	BCEAO 6	5/24/2019	T Morris	8
7	BCEAO 7	5/24/2019	T Morris	9
8	BCEAO 8	5/24/2019	T Morris	10
9	BCEAO 9	5/24/2019	T Morris	12
10	BCEAO 10	5/24/2019	T Morris	12
11	BCEAO 11	5/24/2019	T Morris	14
12	BCEAO 12	5/24/2019	T Morris	20
13	BCEAO 13	5/24/2019	T Morris	23
14	BCEAO 14	5/24/2019	T Morris	25

1.1 points j and K
1.1 bullet 3
end of first paragraph
2.1 Project Overview
2.1 Project Overview
2.1 Project Overview
4.2 Public Consultation
4.7.1 EVWQP
5 Candidate VCs and Screening Intermediate VCs





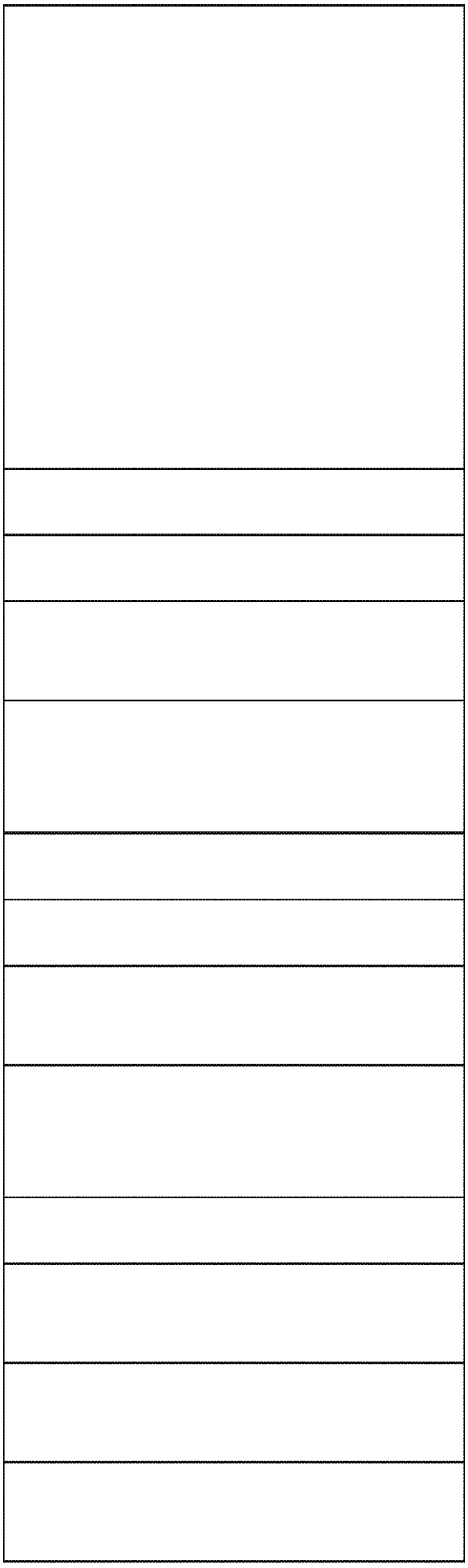
These are essential parts of EA – additional mitigation to reduce CE and monitoring and applying adaptive management measures if required. j.Assessing cumulative effects (as required) and considering additional mitigation measures. j.k.Follow-up Program including management and monitoring plans.
•Identifies specific candidate VCs (receptor and intermediate) and why they are chosen; *EAO updated its VC Guidance to refer to all VCs (receptor and intermediate) as VCs*
Please state in this document that you are complying with EAO guidance on VC Selection and include the link to this guidance document on EAO's website
Please confirm to EAO that this section is consistent with the PD posted to EAO's website. Please note any inconsistencies
Hosmer? Was this community in your PCP? – the two documents should be consistent in their list
Include link to EAO website/Project Description
Please make sure these general themes, section 4.3 and 4.6 are repeated in your PCP
Please relate the EVWQP to your project in the same manner you made the CEMF relevant to your project
You must follow EAO's VC Guidance/updated in 2017 to reflect: -All components are VCs -All VCs will be characterized using standard criteria -Significance will be assessed for all receptor components and sometimes, where there are exceptional circumstances, for intermediate components when specified in the AIR. EAO anticipates Water Quality will require a significance determination (as it did for Baldy Ridge).

Text modified to add ,"j. Assessing cumulative effects (as required) and considering additional mitigation measures. k. Follow-up Program including management and monitoring plans."	Y
Text modified to add, "(intermediate and receptor)".	Y
The statement, "This document and selection process conform to the guidance on VC selection presented in the Guideline for Selection of Valued Components and Assessment of Potential Effects (EAO, 2013)." was added in the first paragraph of section 3 where the selection process is introduced.	Y
Yes, the VC document is consistent with the Project Description.	NA
Yes, Hosmer is included in the Project Description. The text has been updated for consistency to say, "•The nearest communities are Crowsnest, Coleman, Corbin, Sparwood, Hosmer, Fernie, and Elkford, all within approximately 40 km of the Project."	Y
Introductory text has been added to section 2 with the link as follows: The Project Description is summarized below and is available at https://projects.eao.gov.bc.ca/api/document/5b86ded53f64cb00249e24e3/fetch/00Michel_PD_22Aug_2018_Rev03_FINAL.pdf.	Y
Sections 4.3 and 4.6 will be included in the Public Consultation Plan.	NA
Text has been added at the end of section 7.4.1 to say, "The Project will need to be developed and operate in a manner that protects water quality in conformance with the EVWQP."	Y
BC EAO has indicated that intermediate VCs will not be assessed for significance, only for context, magnitude, extent, duration, reversibility, and frequency.	NA

15	BCEAO 15	5/24/2019	T Morris	26
16	BCEAO 16	5/24/2019	T Morris	26
17	BCEAO 17	5/24/2019	T Morris	26
18	BCEAO 18	5/24/2019	T Morris	
19	BCEAO 19	5/24/2019	T Morris	30
20	BCEAO 20	5/24/2019	T Morris	31
21	BCEAO 21	5/24/2019	T Morris	31
22	BCEAO 22	5/24/2019	T Morris	32
23	BCEAO 23	5/24/2019	T Morris	32
24	BCEAO 24	5/24/2019	T Morris	33
25	BCEAO 25	5/24/2019	T Morris	33
26	BCEAO 26	5/24/2019	T Morris	
27	BCEAO 27	5/24/2019	T Morris	36

Air Quality and Emissions
Table 5.1
Table 5.1
Table 5.1
Table 5.1 Non-commercial land use / Recreation
Indigenous knowledge and use
Community health
6 ...managing the project
6 last three sentences
Table 6.1
Table 6.1
Table 6.1
Table 6.1

Terrain Stability	
Soil	
Air	
Public Safety	



It would be helpful to list what the receptor VCs are for each intermediate VC
You have not stated an intermediate VC.
You have not stated an intermediate VC.
Remove hyphen in blank cells
Please ensure for every excluded VC where you reference another VC covering it off, that you have indicated this information in the "covering VC". Use access excluded VC and non-commercial land use as an example for how this should be represented.
The Public may not understand this context – suggested wording to direct they to the AIR template
Where is human health and an indication that you will be undertaking a human health risk assessment?
Do you managing potential adverse effects of the Project? Please clarify.
In accordance with EAO's guidance you must assess all intermediate VC – characterize in accordance with EAO's VC Selection and effects assessment guidance. This statement appears to contract this guidance. Please explain or delete.
Remove highlighting in table as there is earlier text explaining when significance might be determined
What is meant by "worker". Is it on the mine site? Can you confirm if this is an EA item or covered by MEMPR/worksafe BC – worker health? Consider this comment for all VCs where worker health is referenced
Remove hyphen in blank cells
Curious if the public will be restricted from project site ? Not sure what you mean by project physical hazards – are you looking at project vehicle traffic and effect on public safety?

Receptor VCs have been specified in Table 5-1 as follows: Air quality and emissions - wildlife and wildlife habitat, community health, country foods Noise and vibration - wildlife and wildlife habitat, community health, non-commercial land use / recreation Groundwater - surface water, aquatic resources, fish and fish habitat, aquatic health, wildlife and wildlife habitat, wildlife health, community health Surface water quality - aquatic resources, fish and fish habitat, aquatic health, wildlife and wildlife habitat, wildlife health, community health Surface water quantity - aquatic resources, fish and fish habitat, wildlife and wildlife habitat, non-commercial land use / recreation, community health Sediment - aquatic resources, fish and fish habitat, aquatic health Terrain stability - ecosystems, public safety Soil - ecosystems, wildlife health, community health, country foods	Y
Receptor VCs specified to include ecosystems, public safety	Y
Receptor VCs specified to include ecosystems, wildlife health, community health, country foods	Y
Hyphens have been left in to indicate the cells are intentionally left blank. Previous comments indicated people thought the document was missing information when the cells were left blank.	NA
Revisions made in Table 5-1 and tracked as per the model.	Y
Text added to say, "a specific section of the Application referred to as Part C in the EAO AIR template"	Y
Text was added under further rationale to say, "A human health risk assessment will be completed to assess community health."	Y
Text has been clarified to read, ",...and the indicators proposed to be used to determine objectives and targets for assessing, monitoring, and preparing management targets for the Project."	Y
Text has been clarified to read, "Intermediate VCs will be assessed for context, magnitude, extent, duration, reversibility, and frequency, but not for significance."	Y
Highlighting removed.	Y
Worker has been removed from potential effects since worker health is legally protected by worker health and safety regulations and codes.	Y
Hyphens have been left in to indicate the cells are intentionally left blank. Previous comments indicated people thought the document was missing information when the cells were left blank.	NA
Public access to active areas will be controlled as much as possible. Vehicle traffic on the public, Corbin road and the resulting potential risk to public safety has been identified as an issue by many stakeholders.	NA

28	BCEAO 28	5/24/2019	T Morris	40
29	BCEAO 29	5/24/2019	T Morris	40
30	BCEAO 30	5/24/2019	T Morris	41
31	BCEAO 31	5/24/2019	T Morris	42
32	BCEAO 32	5/24/2019	T Morris	43
33	BCEAO 33	5/24/2019	T Morris	43
34	BCEAO 34	5/24/2019	T Morris	43/44
35	BCEAO 35	5/24/2019	T Morris	
36	BCEAO 36	5/24/2019	T Morris	

US EPA

1	USEPA01	4/30/2019		

7.1
7.1
7.2.1
7.2.2
7.2.3
7.2.5
7.3
Appendix A - Murray River Coal
Appendix A - Bingay Main Coal Mine

Fig 6.1

The Draft VC document identifies the aquatic effects pathways that would be assessed for the selected VCs (Figure 6-1). The effects pathways are based on project activities including construction, blasting, mining and storage, process plant discharge, and waste and water management. We recommend that the effects pathways also consider effects due to accidents and malfunctions that could occur such as slope failures of the waste piles, water treatment plant disruptions, etc.

NA	The comment is noted , but no change will be made to the VC document. In the EA Application that will be prepared there will be a section on reasonable accidents/malfunction scenarios and the impacts to relevant receptors.

NA

I am confused – how will you present an effects assessment in your EAC Application that includes pre-construction information. Please reword to reflect the an assessment at the time of submission of an EAC Application
Suggested wording changes. You could also simply move this information in section 7.4
Why is this in the VC document – it is more appropriate for discussion at the AIR. Suggest deleting
This wording suggests an LSA is used for Cumulative Effects – practice is usual to consider the RSA for this assessment. Please confirm if the LSA is the CEA boundary or clarify that RSA is what is used for CEA.
Rewrite in EA terms. Are you suggesting the LSA and RSA for this VC will be the same?
What is the RSA for this VC?
I am confused by inclusion of these "phases". Temporal boundaries should relate to the scope of the EA Act and its regulations as expressed in the section 11 Order.
This project is nowhere near Michel Coal - either explain in text in document what this table is or delete the project
EAO has not approved the VC Selection document for Bingay please reflect that VCs are proposed in Appendix A

"Pre-construction" has been changed to "the submission of the EAC Application".	Y
The revised text regarding access limitations to private land has been moved to Section 7.4.	Y
Water quality standards has been deleted as suggested.	Y
Text has been revised to say, "In addition to the RSA, a single LSA was selected for application in modeling and quantitative assessment of large and wide-ranging terrestrial mammals. Cumulative effects will be assessed for the RSA boundaries.	Y
Yes, regulators have requested one boundary be used. The text has been revised as follows. "There is only one boundary (a combined LSA and RSA) determined for modeling air quality effects from the Project are shown in Figure 7 4."	Y
Text has been added for clarity. "No RSA is proposed for archaeology."	Y
For clarity the text has seperated baseline periods from environmental assessment periods. The environmental assessment period relates only to Initial project construction Operations Closure.	Y
The text in the first paragraph of Section 5 says the following: "Appendix A presents a comparison of VCs for Coal Mountain Phase 2, Baldy Ridge Extension, Bingay Main Coal, Crown Mountain, and the Murray River Coal projects. Comparison of VCs was an important starting point for providing context for developing a list of VCs for similar projects with similar review processes and/or in similar regions." Murray River Coal is a recent example of a greenfield coal mine project approved in BC that included a provincial and federal review.	Y
The title has been revised to say "proposed VCs".	Y

Working Group Responses

Date	Agency
3/27/2019	FLNRO
4/2/2019	ECCC
4/4/2019	Environmental Public Health | Interior Health
4/2/2019	District of Sparwood
4/4/2019	Health Canada
4/8/2019	NRCAN
3/27/2019	MECC
3/27/2019	MECC
4/8/2019	KNC
4/8/2019	BCEAO
4/30/2019	US EPA
5/24/2019	BCEAO
5/15/2019	NRCAN
5/27/2019	ECCC
5/24/2019	Environmental Public Health | Interior Health
5/21/2019	MECC

Responders	Number of comments	Additional comments
Kristen Murphy Garrett McLaughlin	6	
Chelsey Cameron	24	
Gordon Moseley	2	
Jeremy Johnston	6	
Kenneth Law	16	
?	13	
Sarah Alloisio: 2, 16, 17 Kyle Terry: 1, 2, 4, 18, 30, 31 Alison Neufeld: 2, 13, 15, 18-21, 23, 24, 32, 35, 40-42 Tarek Ayache	24	
Tomesine.GulbaekPearce	No further comments	
Marlene Machmer Jesse Sinclair Bernadette Lyons	36	Word document with tracked changes
Julia Taylor	1	
?	1	
T Morris	35	Word document with tracked changes
Shelley Ball	1	
Chelsey Cameron	24	
Gordon Moseley	2	
Sarah Alloisio, Kyle Terry, Alison Neufeld, Tarek Ayache	24	

	Name
1	Sarah Alloisio
2	John Antill
3	Greg Ashcroft
4	Tarek Ayache
5	Brenda Bailey
6	Shelley Ball
7	Paul Beddoes
8	Katrina Caley
9	Chelsey Cameron
10	Craig Candler
11	Lowell Constable
12	Alex Crawford
13	Michael Engelsjord
~~14~~	~~Kevin Esseltine~~
14	Adria Fradley
15	Corrinne Gibson
16	Jason Gildea
17	Bill Green
18	Ryan Greville
19	Tomesine Gulbaek-Pearce
20	Brian Heron-Herbert
21	Al Hodaly
22	Jolene Jackson
23	Joe Jarina
24	Jeremy Johnston
25	Nicole Kapell
26	Snehal Lakhani
27	Kenneth Law
28	Suzanne L'Heureux
29	Eric Leung
30	Bernadette Lyons
31	Marlene Machmer
32	Eamon Mauer
33	Jennifer McConnachie
34	Patty McGrath
35	Garrett McLaughlin
36	Sonia Meili
37	Katherine Morris
38	Gordon Moseley
39	Kristen Murphy
40	Heather Narynski
41	Alison Neufeld
42	Ann-Marie Norris
43	Justin Paterson

Organization

Ministry of Environment and Climate Change
EAO
EAO
Ministry of Environment
Ministry of Energy and Mines
Natural Resources Canada
Ministry of Energy and Mines
Ktunaxa Nation Council
Environment and Climate Change Canada
The Firelight Group
Ministry of Energy and Mines
Transportation and Infrastructure
Fisheries and Oceans Canada, Pacific Region
~~Fisheries and Oceans Canada~~
Ministry of Environment and Climate Change
Fisheries and Oceans Canada
US EPA
Ktunaxa Nation Council
Transport Canada
Ministry of Environment
Ministry of Environment
Environment and Climate Change Canada
Energy, Mines and Petroleum Resources
District of Sparwood
District of Sparwood
Ktunaxa Nation Council
ECCC - Air Quality
HC
Transport Canada
Transport Canada
Waterline Resources Inc.
Pandion Ecological Research Ltd.
Ministry of Energy, Mines and Petroleum Resources
Ministry of Energy and Mines
US Environmental Protection Agency Region 10
Ministry of Forests, Lands, Natural Resource Operations and Rural Development
Ministry of Energy and Mines
Ktunaxa Nation Council
Interior Health Authority
Ministry of Forests, Lands and Natural Resource Operations
Ministry of Energy and Mines
Ministry of Environment
Health Canada
Ktunaxa Nation Council

Meeting Date	Meeting Date
Tuesday, March 12, 2019	Wednesday, March 13, 2019
In Person	Not Attending
In Person	In Person
In Person	In Person
Telephone	Telephone
Not Attending	Not Attending
Not Attending	Not Attending
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Not Attending	Not Attending
Not Attending	Not Attending
Not Attending	Not Attending
Telephone	Telephone
In Person	In Person
Telephone	Telephone
In Person	Not Attending
Not Attending	Not Attending
In Person	Not Attending
Tentative	Tentative
Not Attending	Not Attending

No longer on the WG

Seafood Allergy

44 Hurrian Peyman
45 Fraser Ross
46 Michele Schalekamp
47 Ayn Schmit
48 Janet Shaw
49 Jesse Sinclair
50 Paula Smith
51 Mike Sosnowski
52 Colin Squirrell
53 Julia Taylor
54 Herb Tepper
55 Kyle Terry
56 Erika Uchmanowicz
57 Amy Van Reeuwyk
58 Carolyn Whittaker

Ministry of Environment and Climate Change
Canadian Environmental Assessment Agency
District of Sparwood
US EPA
Canadian Environmental Assessment Agency
LGL Limited
Health Canada
Regional District of East Kootenay
Ministry of Energy and Mines
EAO
Ministry of Forests, Lands and Natural Resource Operations
Ministry of Environment
Natural Resources Canada
Climate Action Secretariat
The Fireflight Group

Not Attending	Not Attending
In Person	In Person
Not Attending	Not Attending
Not Attending	Not Attending
In Person	In Person
Telephone	Not Attending
Tentative	Tentative
Telephone	In Person
Tentative	Tentative
In Person	In Person
In Person	Not Attending
In Person	Not Attending
In Person	In Person
Not Attending	Not Attending
Not Attending	Not Attending

No gluten (including no oats), no dairy, no pumpkin seeds

From BCEAO to NRCan

I understand that NRCan requested information on EAO guidance on VC Selection used for projects undergoing a provinc

components' are Valued Components and there are two types; intermediate Valued Components and receptor Valued

An **intermediate Valued Component** is a component of the natural or human environment that is changed by the pro
Intermediate components are typically abiotic physical media such as air, water, soil/sediment or terrain.

A **receptor Valued Component** is a component of the natural or human environment that is measurably affected by tl
e.g. westslope cutthroat trout; human health.

Residual effects are characterized for both intermediate components and receptor components using the following star
context, magnitude, extent, duration, reversibility, frequency, likelihood, confidence and risk.

The significance of residual adverse effects is assessed for:

all receptor components;

sometimes, where there are exceptional circumstances, for intermediate components when specified in the Applicati

I have copied an excerpt from a presentation EAO provided to the Working Group in June 2017 regarding the VC Selectio